PUBLIC HEALTH

LONDON: THE SOCIETY OF MEDICAL OFFICERS OF HEALTH
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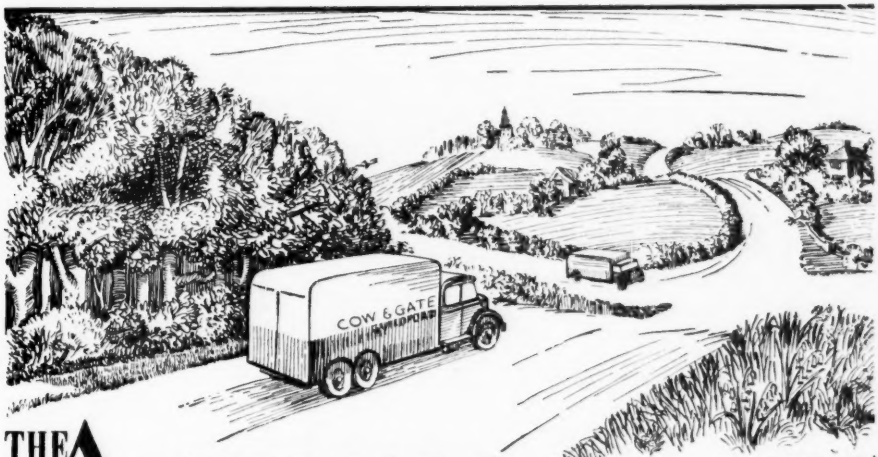

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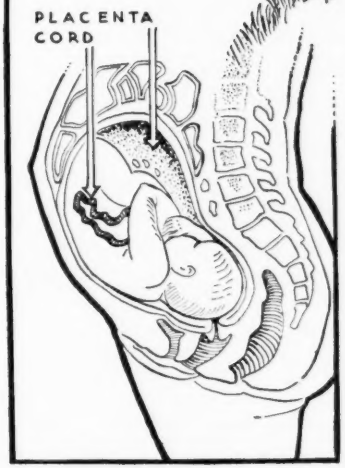

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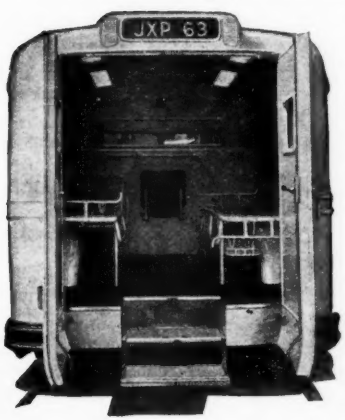

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EDITORIAL

Diphtheria in the Immunised

The saying that " Statistics deal with data [possibly] affected to a marked degree by a multiplicity of causes " applies to this important report.* Although it deals with investigations both in the field and in the laboratory, it begins by disclosing what would seem to be fallacious observations.

The investigation arose out of the reported cases of diphtheria occurring in inoculated persons, particularly noticeable in areas where the *gravis* and *intermedius* types of bacillus were commonly found. The preliminary investigation seemed to show that these cases occurred, not infrequently, in persons with a concentration of antitoxin in the blood of over, sometimes greatly over, 0·1 u/ml. This led to a further investigation which appeared to establish that, at least in some instances, the syringes used to obtain blood samples had been " contaminated " with high antitoxin serum and so had vitiated the results. Taking appropriate precautions it was found that 85·7% of the cases in Newcastle and 81·7% in Gateshead had less than 0·01 u/ml. of antitoxin. Similar findings came from the other area, that of Dundee.

Even so the presence of a limited number of cases in persons who, all precautions in sampling being used, had more than one-thirtieth of a unit per millilitre, required explanation. Several explanations are possible : (*a*) increased virulence of organism requiring a higher antitoxin level ; (*b*) poor antigenicity of certain antigens ; (*c*) poor immunisability of certain persons—a known occurrence ; (*d*) a rapid anamnaestic response occurring early—within say three to four days—of infection in persons who had a low antitoxin titre at the moment of infection ; or (*e*) the possible presence of a substance or substances other than antitoxin to protect against invasion, as postulated by O'Meara. It would appear from this report that (*d*) does occur and that (*e*) cannot be completely ruled out. It is possible that the *gravis* organism can overcome an antitoxic immunity which a *mitis* organism could not, as the latter type is rarely found in inoculated persons with clinical symptoms. It is well to add that this discussion does not indicate any grave failure of the national immunisation campaign. Far from it. On pp. 89 and 90 the markedly different clinical aspects of diphtheria in inoculated and in non-inoculated persons are set out ; no death occurred in 95 inoculated persons having signs of disease. An increase in the *proportion* of cases of diphtheria among inoculated persons is bound to occur during the progress of a campaign of inoculation if—as is the case—the normal full course of inoculation does not give 100% of Schick conversions.

Those concerned with all aspects of diphtheria immunisation should certainly read this report, in which it is gratifying to note the important parts played by Dr. James Grant, of Gateshead, and Dr. W. L. Burgess, of Dundee.

Inoculation and Poliomyelitis

The findings of J. K. Martin, B. P. McCloskey and D. H Geffen pointed to there being a possible association between an attack of poliomyelitis and an inoculation sometime in the month preceding the onset of the attack. Did this association mean that there was a case for believing that paralytic poliomyelitis could justly be attributed to a preceding inoculation ? If so, did that recent injection of an antigen merely localise an already developing paralysis in that particular limb ; or did the inoculation result in some being brought into the paralytic group who would not have been clinically diagnosed as poliomyelitis at all if they had not been inoculated ? Further, was this risk of poliomyelitis one which was present when any antigen was inoculated during the time of poliomyelitis prevalence, or were any preparations more lethal than others ?

For a complete answer to these questions it would be necessary to have the numbers of children of given ages injected with defined antigens at given points of time and in specified areas, and then the number of these who developed poliomyelitis within subsequent periods. Such figures would accurately measure the probability that an inoculated child would develop poliomyelitis, and would also show the relative risks at different ages and with different antigens. Such an enquiry which is the only means by which those risks could be satisfactorily and effectively measured would take a very long time to carry out. In the meantime a speedier, even though less comprehensive approach, has already been made and is described in an article in the *British Medical Journal* of July 1st by Professor Bradford Hill and Dr. J. Knowelden.

The method adopted was the deliberate selection of all those administrative areas of the country in which a large number of cases of poliomyelitis had been notified during a part of 1949. From these districts full information was obtained, in respect of all those children under five years of age who were confirmed poliomyelitis cases, of the dates of onset and distribution of the paralysis and a full history of inoculation from birth to the time of survey. Controls, matched as far as possible for age, sex and district, were obtained for each of these children and their inoculation histories obtained.

The enquiry showed that in the 1949 epidemic of poliomyelitis in this country, although there were no indications

* Medical Research Council Special Report No. 272. " A Study of Diphtheria in Two Areas of Great Britain." H.M.S.O. (1950). Price 4s.

that an injection three or more months before the illness affected the distribution of the paralysis, and little evidence of inoculations within one to three months having evil effects, the distribution of the bodily sites of paralysis was quite abnormal in children who had been inoculated within one month preceding the onset of illness. Whereas in the uninoculated paralysis in the legs is two to three times as common as in the arms, the corresponding limbs being equally affected, in the group of those recently inoculated paralysis in the arms was as common as it was in the legs, the left arm (the commonest site of inoculation) being much more commonly affected than the right. Of the children inoculated within one month of their illness four-fifths had paralysis in the limb of injection (though not necessarily confined to that limb), a very much higher ratio than that found in children whose last injection was more than a month distant. In most cases where the interval between inoculation and onset was less than one month, the time was between 8 and 17 days.

In previous studies it seemed that these paralyses occurred more commonly if pertussis vaccine or a combined pertussis preparation was inoculated than when A.P.T. was the antigen. The preparation with which the children in this enquiry had been inoculated however was more commonly A.P.T. or the combined vaccine. There was little information about the effect of inoculation of the pertussis vaccine alone, probably because it is little used.

On the question of whether the inoculation merely localised an attack which would have developed in any event or actually precipitated one which would not otherwise have occurred, the excess of recently inoculated children in the poliomyelitis group as compared with the paired controls and the fact that the frequency of inoculation is consistently equal beyond one month from the date of onset in the paralysed cases suggests that that group included cases which would not have been diagnosed as poliomyelitis at all if there had been no previous and recent inoculation.

This enquiry then gives the answer, at least in relation to the 1949 epidemic in this country, to the questions posed. There is a definite association between inoculation and the onset of poliomyelitis within 30 days; paralysis has followed the injection of A.P.T. and of the combined A.P.T. and pertussis vaccine; and so far from the effect of the inoculation being merely to localise the site in one who was already developing an attack of poliomyelitis, it seems to bring about an attack in some who otherwise would not have developed it.

The Chief Medical Officer of the Ministry of Health, in a letter to medical officers of health, has recommended that in any locality in which poliomyelitis is becoming exceptionally prevalent, it would be prudent to suspend for the time being the use of diphtheria antigen as well as of those containing pertussis vaccine. So long as a sense of proportion is kept about the relative risks involved by poliomyelitis and on the other hand by a drop in the safety level of diphtheria immunisation with the possible return of diphtheria in epidemic form there seems to be no alternative, but it is a regrettable state of affairs. Dr. Guy Bousfield for one, in his recent article in *The Medical Officer*, seems to be in no doubt as to which is the more dangerous disease.

Wastage of Infant Lives

Volume IV of the Papers of the Royal Commission on Population* contains the Reports of the Biological and Medical Committee on the subjects of "Reproductive Wastage (Abortion, Stillbirth and Infant Mortality)," "Reproductive Capacity and the Birth Rate," and "Involuntary Childlessness." Many of the findings of these reports have been included in the main Population Report which we reviewed in our August, 1949, number. The report on reproductive wastage finds that between 15 and 22% of all children conceived are lost; 9 to 16% of this loss represents pregnancies which end in abortion (induced abortion probably being less than half); 2·3% are lost by stillbirth; 2% in the first month of life, and 1·4% between one month and one year. Induced abortion is to be regarded more in the light of family limitation and its prevention (by better knowledge of birth control), although obviously desirable, would not increase the birth rate. Some saving in spontaneous abortions might be affected by better hospital facilities and by the provision of rest for expectant mothers. (This finding emphasises the need for local health authorities to increase the rest homes for expectant mothers as a form of convalescent treatment.) In general, however, the report emphasises the need for more medical research into the cause of spontaneous abortions. Here again, there is a chance for field work by the medical officer of health, supported by the Medical Research Council. The further reduction of neo-natal mortality calls for better spacing of births (*i.e.*, family planning), greater facilities for the care of premature babies, and further education of mothers in the dangers of infection. The rest of the infant mortality "could be very much lower if each baby were properly fed and protected from infection by a mother who was equipped with the good health, the home facilities, the knowledge, the skilled counsel necessary to this task." The report finds that the 5·5% (excluding abortions) might now, on present knowledge, be reduced to 4%.

The proportion of couples who are involuntarily childless is considered as that in "a group of married couples whose biological capacities were typical of those of present-day British people and whose mating was entirely unrestricted by birth control." An investigation (not necessarily typical of the population at large) yielded a figure of between 6·9 and 8·2% for a sample of women who had married before 1925. This finding is further supported by studies of the census figures for women married at various ages between 1861–71 (8·1), 1871–81 (8·4), 1881–86 (8·7), and 1886–91 (9·2). The earlier figure (*i.e.*, about 8%) may be said to approximate most to "involuntary" childlessness. The proportion, as shown in the 1911 census for women marrying between 1861–71, rises rapidly with advancing age of marriage from 3·5 for age 15–19 to 29·9 for age 35–44. Nevertheless, the report considers that there are some reasons for thinking that among present-day women the proportion of involuntary childlessness may be somewhat lower than in the 19th century; this by reason of better control of infections, better nutrition and physical development, the reduction of stillbirths. The probable present-day figure lies between 5 and 8%. In the same category of involuntary childlessness is to be placed a group of about 4·5% who are restricted involuntarily to one child and 5·5% likewise restricted to two children.

Our knowledge of the causes of infecundity are found to be very inadequate. From a half to two-thirds of the couples seeking advice show one of the three main causative factors—defective spermatogenesis (the commonest), blocked tubes and failure to ovulate. In many couples no cause can be found and endocrine deficiencies only can be postulated. On the question as to whether birth control reduced fecundity the report says, "There is at present no evidence that birth control methods which are generally approved by the medical profession and regarded by them as harmless impair fecundity. But the subject has certain intrinsic difficulties and needs further investigation." There is a valuable statement of evidence as to the possibilities of reducing involuntary childlessness and the report says, "We believe that the best chance of stimulating progress lies in the encouragement and development of these special fertility clinics, so that facilities for the investigation of involuntary childlessness could be made part of the health service of the country. They should be so designed as to provide, at each centre, for the expert investigation of all the factors that may be involved, whether on the male or female side. This can be assured only by a team of specialists working in co-operation. Such facilities should be provided on a regional basis."

On the subject of reproductive capacity and the birth rate the report concludes, ". . . while it is not possible to exclude a decline in reproductive capacity since the 1870s, there is no definite evidence that such a decline has occurred. The evidence seems to us overwhelming that the observed reduction in the average size of family has been due, in much the greater part at least, to the spread of deliberate family limitation. It is possible that a reduction in reproductive capacity has played a minor part in the decline in family size, and some changes in the general conditions of life can be pointed to as possible causes

* Pp. 52. Price 1s. 6d. H.M. Stationery Office.

of such a reduction. On the other hand, other changes in these conditions tend the other way. The available information about the reproductive capacity of modern couples suggests that a reproductive achievement substantially equal to that of 19th century married couples would still be attainable. It would certainly be possible for the married couples of the present time to have much larger families than those produced in recent years. Moreover, there is evidence that the disparities between racial, social and religious groups in the degree of decline in the birth rate owe nothing to differences in reproductiye capacity."

These three reports are worthy of close study.

Hot Water and Health

Dr. J. L. Burn, of Salford, recently sent a letter to the Council of the Society urging that representations should be made for the reduction or abolition of purchase tax on domestic water heaters, in view of the importance of these appliances in maintaining personal cleanliness and health in the deplorable housing conditions which are still so prevalent. Unfortunately, the whole question of purchase tax is so tied up with politics and involves so wide a range of goods with a bearing on health that the Council could not see its way to immediate action; the matter, however, is to be kept alive in the Society and is to be further considered.

Dr. Burn's argument regarding the importance of water-heaters as a health factor are strongly reinforced from another quarter, that of the Ministry of Works' Committee on Heating and Ventilation whose first report has been published recently.* This is one of the most interesting documents in the field of domestic living conditions which has emanated from any Government department and we commend a study of its findings to all medical officers of health, for they certainly have a bearing on the time-honoured function of the M.O.H. to "inform himself as far as practicable respecting all matters affecting or likely to affect the public health in the district and be prepared to advise the local authority on any such matter."

The inquiry was conducted by the Social Survey Panel of the Scientific Advisory Committee on the familiar "random sample" method, first, under severe winter conditions in March, 1947, repeated in the summer of 1948, in order to study seasonal effects. The winter sample covered 6,000 representative households and the summer sample a somewhat smaller number. Its objects were to discover the distribution of existing hot water appliances and facilities; the relation between these facts and the consumption and use of hot water; and the amount of hot water adequate for the household. The results must be, even to the M.O.H. aware of his area's domestic shortcomings, somewhat of a revelation. To quote just a few of the findings :—

7% of the households have no piped supply of cold water.
15% have no water heating appliance at all—not even a copper.
28% have a copper as the one and only appliance.

The proportion of households having no appliance rises sharply from 2% in the economic Group V households to 29% in the Group I; 46% of the households have no bathrooms, a further 8% share a bathroom, 12% have no bath whatsoever, 31% only a portable bath and 3% a bath fitted in some room other than a bathroom. (The proportion without a bath at all is exceptionally big in Scotland—38%. Does this explain some of the migrational phenomena which have puzzled the English observers? Or account for the toughness of the Scots? Or prove that the English bathe too much?)

The personal side of the inquiry reveals too some interesting facts about the predilections of housewives for various types of heating and their repercussions on the work of the home. Enough has been said to show that this is a social document of major importance which should be studied in every health department as ammunition for the local efforts in improvement of the people's living conditions and personal habits.

* An Inquiry into Domestic Hot Water Supply in Great Britain. Part II. Distribution of Water Heating Appliances and Their Use in Winter. National Building Studies No. 8. (Pp. 50. Price 1s. net.) London: H.M. Stationery Office, 1950.

Our Knowledge of Nutrition

The Committee established in October, 1947, by the Council of the British Medical Association to examine "the whole question of nutrition in this country and prepare an authoritative report with particular reference to the adequacy and inadequacy of the war-time and post-war diet" has now published a report.* There is an introduction with summary of main conclusions (a neat device for focusing the attention of the hurried reader on the essentials); chapters on nutritional requirements, food consumption, clinical assessment of the nation's health in terms of nutrition, psychological and practical aspects of nutrition, and finally recommendations. The 106 pages of the report are packed with information and it justifies careful readings but it is a somewhat disappointing statement in which attempts to compromise between conflicting views have produced a constitutional weakness in the whole organism. Perhaps the main value of the report is to emphasise how little we really know about what people eat. There can be no attempt here to summarise a work of this character and the following matter is selected as of general interest.

There have been big changes in war-time and post-war food supplies (for example, milk up, meat down, 42% total calories from potatoes and grain in place of 34%), nevertheless, we know little about fundamental changes in food habits, particularly among young people; the continued uncertainty as to what constitutes a proper calorie intake in all the many varying circumstances of our national life calls for further intensive study and the Committee recommends inquiries and, in particular, a study of diet in relation to efficiency in industry; there have been a redistribution of food to the probable advantage of the poorer sections but the absence of more information about the consumption of food in different groups makes it impossible to determine the degree of underfeeding. The following developments are recommended: meals on wheels for the aged, priority issues of milk at home to school children during school holidays, priority issues of foods at home to workers (especially adolescents) where works canteens are not available, special catering establishments in all hospitals, the removal of restriction on the purchase of food as speedily as possible, better methods of clinical assessment of nutrition (anthropometric and medicinal), the regular use of family and individual food surveys by appropriate authorities as a means of ascertaining food consumption in different groups and classes of the people. Here again, as in so many other matters where our knowledge is deficient, there is an opportunity for the medical officer of health to do valuable field research.

A Coming of Age

We congratulate the National Smoke Abatement Society on the occasion of its 21st birthday, and wish it as many happy returns as may be necessary for its dissolution when its object is wholly attained by the disappearance of atmospheric pollution as a feature of British life!

That Society's journal, *Smokeless Air*, publishes in its Spring, 1950, number a short history of the 21 years since its beginnings in 1929, with the amalgamation of the Coal Smoke Abatement Society (formed in London in 1899) and the Smoke Abatement League of Great Britain (founded in Sheffield in 1909 and later nurtured in Manchester). The list of Presidents of the N.S.A.S.—the late Dr. H. A. Des Voeux, Mr. Will Melland, Sir George Elliston, Lord Simon of Wythenshawe and Dame Vera Laughton-Matthews—and of other prominent members of the Society's committees, such as Mr. Charles Gandy, Dr. R. Lessing, Dr. Veitch Clark, Prof. Johnstone Jervis and the late Mr. Morton Rowe (Manchester's smoke inspector), indicates the combination of enlightened lay and medical opinion which has given the Society its driving force and has brought up the number of affiliated local authorities to nearly 400. We surmise that modesty has precluded the mention of one man who has done as much as anyone in the

* Report of the Committee on Nutrition. (Pp. 106. Price 7s. 6d. net.) British Medical Association, Tavistock Square, London, W.C.1. 1950.

good cause, that is the General Secretary of the N.S.A.S. throughout the 21 years, Mr. Arnold March, M.SC.TECH., M.INST.F., whose book on "Smoke" (1947) constitutes the standard work on this subject.

The same issue of *Smokeless Air* includes the script of an interesting B.B.C. broadcast talk to Europe given by Dr. Bronowski on November 23rd last on the subject of that traditional British institution "Fog." In it he said :—

> "It's typical, too, of Britain that it has been the enthusiasm of private citizens in the work of the National Smoke Abatement Society which has kept the need for economy and efficiency, as well as cleanliness, before the British people. It's only in very recent times that the Government has entered the field with its own type of planning. A government fuel research station has been opened, fuel economy campaigns have been organised, and, generally speaking, they have been far-sighted and intelligently run. But there has been a minimum of law making and a maximum of practical help."

Two other interesting contributions to the current issue of *Smokeless Air* are reviews of the voluminous U.S. Public Health Service report on the notorious Donora "Smog" episode of October, 1948, which caused ill effects in 42·7% of a population of 14,000 and 17 deaths. Dr. J. S. G. Burnett (M.O.H., Preston C.B.) reviews the biological studies in the report, and Dr. A. R. Meetham, M.A., D.SC., the atmospheric studies.

Movable Dwellings

This is the first comprehensive and authoritative survey of problems arising from camping, caravanning, sub-standard housing, shacks, and so on. Giving both the causes of the problems and the recommended remedies, in many instances going into considerable detail, it is likely to become the indispensable handbook for everyone concerned with the planning, public health, sociological and other aspects of these activities.

Although a private document, it is in the great tradition of the national reports on the utilisation of the countryside, access to the countryside, National parks, nature conservation, etc. It is of potential value, both for encouraging the best recreative use of the countryside by the townsman, for reconciling the many different claims on the land, and for protecting the countryside from damage.

The local authority and professional associations, including our Society, took part, as did many individual planning officers, town clerks, surveyors, medical officers of health, sanitary inspectors, local councillors, planning consultants, engineers, lawyers, champions of the countryside, campers, caravanners and showmen.

The technique used for this Conference was of some novelty and interest since, as conveyed by its title, it met at monthly intervals over a period of two years with circulation of documents between meetings. Interim action was taken to make recommendations to the Minister of Town and Country Planning before the issue of the General Development Order under the T. & C.P. Act, 1947.

The policy of the Conference Report is broadly aimed, first at getting a more satisfactory definition of "movable dwelling"; secondly, to achieving the complete disappearance of dwellings not in accordance with proper housing standards and not generally mobile; and thirdly, at the proper control of temporary housing and of camping sites without undue interference with *bona fide* recreational camping and caravanning.

The Report contains useful information, not readily obtainable elsewhere, on planning and public health legislation relevant to the subject under review and on the local powers still embodied in private Acts. It does not claim to put forward the official and confirmed views of all the associations which took part, but it does represent the combined efforts of all interested parties at clarifying a difficult subject and at presenting the facts with a view to improvement. It is, in fact, a good piece of team work which we commend for addition to the reference library of every health department.

* The Report of the Movable Dwelling Conference, 1947–49. (Pp. 96; price 2s. 6d., or 2s. 10d. post free.) Published by the Town and Country Planning Association, 28, King Street, London, W.C.2.

Medical Ethics

The British Medical Association has recently issued, and is sending to each medical practitioner throughout the country, a small pamphlet entitled "Ethics and Principles of Medical Profession." It is designed primarily for the information of practitioners who have qualified during the last ten years. In the tradition of the B.M.A. to take action on matters which affect the whole profession, this pamphlet is being sent not only to members of the Association but to non-members. Though it does not attempt to supplant the functions of the General Medical Council in regard to professional conduct, it sets out very concisely and lucidly the principles and salient points of ethics in general practice, and should be a useful contribution towards maintenance of the old standards of the profession in the new set of circumstances arising from the National Health Service.

THE ANNUAL DINNER

The Annual Dinner of the Society will be held this year on Thursday, November 23rd next, at the Piccadilly Hotel, W.1, at 6.45 for 7.15 p.m. The President for Session 1950-51 (Dr. J. M. Gibson) will be in the chair and the principal guest will be the Chief Medical Officer for the Ministries of Health and Education and to the Home Office (Sir John Charles, M.D., F.R.C.P., D.P.H.). Tickets will cost 22s. 6d. (inclusive of coffee and gratuities but not of wines, spirits and smokes). Applications should be sent as early as possible, with remittances, to the Executive Secretary.

Joint Tuberculosis Council. Dr. Norman England, of Oxford, recently resigned the Honorary Secretaryship of the Joint Tuberculosis Council. The new Honorary Secretary is Dr. R. L. Midgley, Hawkmoor Sanatorium, Bovey Tracey, S. Devon. (Tel.: Bovey Tracey 2107.) Other officers of the Council remain as previously, *viz.*, Chairman, Dr. Peter W. Edwards; Vice-Chairman, Prof. F. R. G. Heaf and Dr. N. Tattersall; and Honorary Treasurer, Dr. A. P. Ford.

It will be of great assistance to the work of the Council if all communications are addressed to Dr. Midgley at Bovey Tracey and not to Dr. England at Oxford, even if writing in reply to a communication signed by Dr. England.

Food and Drink Infections

The Central Council for Health Education announce the holding of their second conference on this subject (the first having been held in 1947) on Thursday, August 31st next, during the course of the British Food Fair, at Olympia, London. The purpose of this conference is to re-examine this problem and the progress made, and to consider what further practical measures can be taken by the local authorities to reduce these infections. Sir William Jameson will take the chair and at the morning session (10 a.m.) subjects and speakers will be "The Problem Restated" by Prof. G. S. Wilson (Director of the P.H.L.S.), "Conditions in Catering Establishments" by Miss Betty Hobbs, B.SC., PH.D., DIP. BACT. (assistant in charge Food Hygiene Laboratory, P.H.L.S.) and "Gastro-Enteritis in Infancy" by Sir James Spence (Professor of Child Health, Durham University). At the afternoon session (2 to 4.30 p.m.) "Action by the Local Authority" by Dr. E. K. Macdonald (M.O.H., Leicester, Chairman C.C.H.E.), "Gaining the Co-operation of the Food Trades" by Mr. H. A. Perry, M.R.SAN.I., M.S I.A. (chief sanitary inspector, Guildford), and "The Housewife's Point of View" (speaker not yet known). Visits of practical interest are being arranged for the evening of August 31st and for those who wish to stay during September 1st. There will also be an opportunity of seeing at the British Food Fair in the same building a display on the food and drink infections prepared jointly by the P.H.L.S. and C.C.H.E.

Dr. A. Michael Critchley has been seconded from the Ministry of Supply medical branch so that he may take up the appointment of Professor of Public Health in the Royal University, Baghdad, Irak, from October 1st next.

A Correction.—In our July issue, in Prof. Grundy's paper, on page 192 a footnote referred to "Illness in Infancy" and the price quoted was 2s. 6d. This book is published by Luton Borough Council and the price should be 3s. 6d. (postage 2d.).

THE DEPARTMENT OF HUMAN ECOLOGY AND THE MEDICAL OFFICER OF HEALTH*

By A. Leslie Banks, M.A., M.D., F.R.C.P., D.P.H., Barrister-at-Law,

Professor of Human Ecology, University of Cambridge

It is nearly ten years since I first addressed the East Anglian Branch of the Society of Medical Officers of Health. I think it was in 1941 that I gave a résumé of Public Health in the Eastern Region following the outbreak of war. That meeting is remarkable to me for two reasons. It was the beginning of a very happy association with this Branch and moreover it was the last occasion on which I ever read a paper. Since that day I have always spoken from notes. It was at the beginning of regional organisation and I was anxious to enlist the co-operation of the medical officers of health and prepared therefore a very detailed address. I can remember to this day how my imagination ran on about three lines ahead and produced such anxiety in my mind that I decided that never again would I read a paper word for word. Much has happened since that time. The Branch has had many new members and some, fortunately only few, of the old faces are missing. Wood White, Hunter and Wainwright are three of the medical officers of health whose advice and assistance I welcomed particularly in those early days, but nearly all the other medical officers of health are still happily with us.

The past ten years have been remarkable for many things. First, the war with all its strains and stresses which you in East Anglia felt particularly because of the vast additional numbers of people with whom you were called upon to deal. Next, the development of the National Health Service and, lastly, the rise of a new subject entitled "Social Medicine." It is difficult to realise how recently this subject has become a separate entity in this country. Professor Ryle went to Oxford only in 1943 to become the first Professor of Social Medicine there. In passing I would like as a member of this Branch to pay tribute to Professor Ryle. Many of you will remember him as Group Officer in the E.M.S. in this region and the enormous amount of time he devoted in helping to build up the hospital organisation in East Anglia.

When the developments of Social Medicine were discussed within the University of Cambridge it was, I understand, decided to choose the wider title of "Human Ecology." Ecology is not a new name. It was first used by Haeckel in 1873 who described it as "that branch of biology which deals with the relationships of living organisms to their surroundings, their habits and modes of life." He summarised it by saying that it meant all the various relations of animals and plants to one another and to the outer world. In 1893 Burdon Sanderson, in his Presidential Address to the British Association, referred to ecology which, he said, uses all knowledge it can obtain from physiology and morphology but chiefly rests on the exploration of the endless varied phenomena of animal and plant life as they manifest themselves under natural conditions. H. G. Wells later said that ecology "deals with the welfare of species generally, how they hold their own in their environment and how they depend upon and serve other species of plants and animals; how they prosper and increase and suffer and decline. It is the science of the balance of life." The name derives from the Greek *oikos* meaning a house, and human ecology is a term that has been in use for at least 25 years. Courses in human ecology have been given, for example, at Harvard University for a long time. Bews pointed out in his book on human ecology that the difference between animal ecology and human ecology is that man can control his environment and therefore the element of conscious will is introduced and psychology enters the field with sociology, anthropology, climatology and the like.

The Department of Human Ecology in this University was finally approved on December 10th of last year and it includes the Student Health Service under Sir Alan Rook. This service provides, on a voluntary basis, preventive medical examination for all new entrants to the University. The report of the first year of working shows that the service has been remarkably successful. It includes mass radiography and we hope to extend it soon to include other matters such as the safeguarding of workers at special risk within the University. Dr. Allan McFarlan, Reader in Human Ecology, is well known to you as an epidemiologist of international repute and you will be pleased to know that he has recently been recognised by the Medical Research Council as a Consultant Epidemiologist. The Bio-Statistician of the Department, Mr. N. J. T. Bailey, is a bio-statistician of repute and there is of course the Professor —absent-mindedly referred to in the United States as the Professor of Morbid Ecology. The Department is at present housed temporarily in the Naval Hut at Downing College but a new building, designed for the purpose, is already under construction. We hope to move into this at the end of this year or the beginning of next and these premises will provide good accommodation for the Student Health Service, for Mr. Bailey and his statistical machines, in addition to rooms for field workers and a library which can be used as a conference room.

The Department has now completed its first term and already it is possible to tell you something of our projects and hopes for the future.

First of all we hope to begin in May a survey into chronic rheumatism in East Anglia with particular reference to the Fens. This project will form the counterpart of the Manchester survey on chronic rheumatism in industrial areas.

The next project, which has already begun, is part of the enquiry now in hand by the Nuffield Provincial Hospitals Trust into the functions and design of hospitals. We have been asked if we would investigate the measures to be taken to bridge the gap between the hospital and the home.

Thirdly, there comes the question of field studies in epidemiology. Dr. Allan McFarlan has been engaged on these for some time and I hope that he will take part in this discussion and tell you some of the projects that he has in mind. He points out that bacteria and viruses form part of the human environment and so the study of infectious diseases is an important part of human ecology. He and I have discussed in some detail the assistance we would like from this Branch and I will refer to this again.

Fourthly, we hope to investigate certain aspects of tuberculosis, including B.C.G. This is a project which may require your assistance also.

Some work on the care of the aged and infirm has already begun as part of the experimental Cambridge Home Care Scheme and we hope to extend this service in the near future. If University approval is forthcoming we hope to establish a Lectureship in Geriatrics.

On the subject of industrial medicine I have already mentioned the proposal to extend the Student Health Service to include occupational hazards within the University. In addition, we have been asked for assistance in investigating certain problems of working conditions in industry and we hope to start on this soon.

The social background of nursing is a subject which has interested me for a long time and the Board of Governors of the United Cambridge Hospitals has recently agreed in principle to a Nursing Scholarship available for a nurse who has had a minimum of one year's hospital experience after qualifying. I am hopeful that the East Anglian Regional Hospital Board may provide a similar scholarship for a nurse from their hospitals and these two nurses would then be available to work on social problems of nursing in the hospital and the home. Incidentally, I am particularly anxious that they shall investigate home nursing as well as hospital conditions.

There is another subject on which I would particularly welcome your advice and that is an enquiry into the health and welfare of rural workers.

So much for some of our aims. As you will see there is no intention to build up a huge research department, and we would much prefer to work through existing organisations such as this Branch. I would like, therefore, to put to you three proposals for discussion. They are :—

*Address to the East Anglian Branch, Society of M.O.H. Cambridge, 1st April, 1950.

1. Would the Branch be prepared to establish a Research in Preventive Medicine Committee to work with us and in particular with Dr. Allan McFarlan on his epidemiological investigations ?

2. Would you please tell me what are, in your opinion, the special problems affecting the health and welfare of rural workers.

3. Are there any other problems which, in your view, require investigation ?

I have deliberately made this a short paper in order to leave time for discussion. I will conclude by saying that if at any time any member of the Branch has a problem which he wishes to work up we shall be very glad to discuss it with him.

SOME RECENT DEVELOPMENTS IN HEALTH STATISTICS — INTERNATIONAL, NATIONAL AND LOCAL*

By W. P. D. LOGAN, B.SC., M.D., D.P.H.,
Medical Statistician, General Register Office

International Health Statistics

In the international field one of the most important events in recent years, so far as health statistics are concerned, has been the Sixth Revision of the International List of Causes of Death. Though still following the general pattern of its predecessors, the new list has been expanded to provide adequate details of *all* diseases and injuries, not just those likely to lead to death. It thus provides a classification intended for use not only for mortality but for morbidity purposes. Indicative of its wider scope, the list has been given the new title "The International Statistical Classification of Diseases, Injuries and Causes of Death."[1]

The history behind the creation of the original International List in 1893 began 40 years earlier when in 1853 Dr. William Farr, of the General Register Office, indicated to an international conference the lines on which an international classification should be constructed.

The International List that came into existence in 1893 was based on those principles that Farr had previously laid down. It underwent periodic revision at Decennial Conferences convened by the Government of France in 1900, 1909, 1920, 1929 and 1938. The Sixth Revision Conference in 1948 which, it has been justly claimed, marked the beginning of a new era in international vital and health statistics, was the last to be convened by the French Government, and responsibility for the future supervision of the list has now been entrusted to the World Health Organization. That this should be one of the duties of W.H.O. was something that we in the United Kingdom had pressed for strongly, convinced that in this course lay the best prospects for the future success of the new List. Health statistics, their international comparability and the instruments by which that comparability was to be achieved were, in our opinion, proper interests of an international organisation such as W.H.O. The new List was designed for the use not just of vital statisticians but of *all* workers in the medical field, and it was appropriate that it should be brought under the aegis of an organisation in which statisticians foregather with clinicians, sanitarians, epidemiologists, and the many other experts concerned with international health in all its aspects.

So much, then, for the history of the International List. There is a detailed account in the introduction to Volume I of the new Manual ; and in the recent International Health number of the *British Medical Journal* there was an article by Dr. Percy Stocks[2] who, as Chairman of the Expert Committee that drafted the new List, has done as much as anyone in the world to bring it into being and to make it the good piece of work it is.

The new Classification has rendered obsolete the Provisional Morbidity Classification[3] published by the Medical Research Council in 1944, and this has now gone out of official use. The Provisional Morbidity Classification fulfilled a necessary function during and shortly after the war in connection with hospital and other statistics of illness and injury, and the experience gained from using it served well in guiding the compilers of the new List, especially as Dr. Stocks and Dr. Robb-Smith took part in preparing both lists. I should add that the Therapeutic Classification (*i.e.* the Operations List) that was contained in this M.R.C. Manual has not yet been replaced, though the Registrar General's Advisory Committee have in hand the preparation of a new Operations List. Furthermore, the M.R.C. Manual included a short version of the 1931 Occupational Classification. This, too, has not yet been replaced though it will be soon ; a new Occupational Classification will be published later this year.

In addition to the M.R.C. Morbidity Classification, there is another important list of diseases to which I must refer and which has *not* been made obsolete by the new list. It is the Nomenclature of Disease[4] of the Royal College of Physicians, the latest edition of which came out in 1948. Despite the fact that there is a clear-cut difference between a nomenclature and a statistical classification, the two are frequently confused even by those who ought to know better. Each is designed for its own specific purpose and the one cannot replace the other. A medical nomenclature is a list of approved terms for describing and recording clinical and pathological observations. It gives what is considered to be the most desirable name for every disease, symptom, or pathological condition. For instance, there are at least three fairly well-known synonyms for pink disease—acrodynia, erythroedema polyneuritica, and Swift's disease, but if you consult the Royal College of Physicians Nomenclature you will find that "pink disease" is the approved name though erythroedema may be used as an alternative. A statistical classification, on the other hand, is not concerned with what a disease ought to be called—though it is a help in disease classification if well-known and accepted terms are used instead of unusual ones—but with providing convenient groups into which various morbid conditions can be placed that have some kind of affinity with each other so that they can be counted or discussed in a manageable way. For instance all the clinical and bacteriological varieties of diphtheria are lumped together in the Statistical Classification under the one heading "055 Diphtheria." A nomenclature tells you what name you ought to call a disease by ; a statistical classification tells you into what group it ought to go.

So far as the actual content of the new List is concerned I propose to say little. You have all seen it, I expect, and you will have some idea of its general structure and of what it contains. There are just one or two special features to which I should like to draw attention.

The first is the Injuries Section, which has been greatly enlarged and now contains a double classification, by the *external cause* of the injury (*e.g.* run over by a van) and by the *nature* of the injury (*e.g.* compound fracture of the femur).

A second feature is that, in addition to the full list of some 800 categories, there is an intermediate list of 150 categories. Also two short lists are suggested, each of 50 categories, one intended for mortality and the second for morbidity classification of social insurance data. Short lists for other kinds of morbidity data will be suggested when some experience has been gained. Although there are these abbreviated lists, it is always advisable to code to the full detailed list in the first instance and reduce the tabulations to one of the shorter lists afterwards if desired. If coding is done directly by a short list, no transformation from that list is practicable afterwards, but if detailed coding is done to start with, all things are then possible.

The last point to which I want to draw attention is the Index, which constitutes Volume II of the Manual and contains something like 30,000 entries. This very comprehensive Index will make it much easier for coders to work with the Classification.

These, then, are a few points about the new List. It will be used by the General Register Office for all its morbidity and mortality tabulations from 1950 onwards. It has been agreed that it will be used by all Government Departments in this country that are concerned with health statistics—the Ministries of Health, National Insurance, and so on—and by the three

* Paper presented to the annual meeting of the County Borough Medical Officers of Health Group, Society of M.O.H., Scarborough, June 3rd, 1950.

branches of the armed forces. Moreover, it will be used by all the member states of the World Health Organization so that practically all the countries that publish mortality statistics will soon be doing so in a form that allows a much better comparison between one country's figures and another's. An agreed classification is not by any means the only thing needed for internationally comparable statistics, but it is a very necessary first step.

A further necessary step has been taken by the international adoption of a standard form of medical certificate of cause of death, a form which differs only very slightly from the one that was already in use in England and Wales. The actual layout of the death certificate may not, on the face of things, seem a very important matter compared with what is actually certified on it but, in fact, unless a standard form of certificate is used, there can be little prospect of obtaining reasonably comparable statistics.

Agreement has also been reached on the method of selecting one cause of death for assignment when more than one cause has been mentioned on the death certificate. The method that we adopted in 1940, whereby the certifying practitioner, by his order of statement, indicates which should be regarded as the underlying cause of death, has now been adopted internationally. As a result the deaths in each country assigned say to diabetes will be those thought *due* to diabetes, not the deaths of diabetics, a very different matter.

The international comparability of health statistics is an objective well worth striving for, not only in order that the activities of the World Health Organization shall be guided by fact rather than by conjecture but so that each country can have a set of standards with which to compare its own experience. Shortcomings and deficiencies will thus be revealed, complacency destroyed, corrective action stimulated and the results of such action measured; and we in the United Kingdom will gain from these comparisons no less than other countries throughout the world.

Turning now from the International Classification but still within the field of international health statistics, a second achievement of great significance has been the appointment by the World Health Organization of an Expert Committee entrusted with the study of problems connected with health statistics. This Expert Committee meets once a year—its second annual meeting was in April of this year—and it, together with its sub-committees, has been engaged on the problems of the definitions of stillbirth and abortion, schemes for the registration and follow-up of patients suffering from cancer, and methods of collecting hospital statistics. Another matter to which some attention has been paid has been the training of undergraduate medical students and of public health students in the methods of statistical presentation and analysis.

The World Health Organization has recognised the imperative need for sound health statistics and, in consequence of the importance that it attaches to the matter, has set up a separate Health Statistics Division within its Secretariat. This Division works in very close collaboration with the Division of Epidemiology, the two Divisions formerly constituting the Division of Epidemiology and Public Health Statistics.

National Health Statistics

Under this heading I want to refer briefly to some of the morbidity studies that have been initiated recently, confining my attention to those studies that are being dealt with by the General Register Office.

(1) *Hospital Statistics.*—Under the title of the National Morbidity Enquiry arrangements have been in operation since the beginning of 1949 whereby all the general teaching hospitals in England and Wales and all the hospitals in the City of Manchester and the County of Leicester send us a summary record of their in-patients with a statement of diagnosis and complications. A special questionnaire is completed in respect of patients admitted on account of injuries.

During 1949 we received about 300,000 summary records. These are now being analysed, and we shall be publishing some interesting and, let us hope, instructive tabulations in the near future. On account of their highly selective nature, hospital statistics by themselves will be of only limited value as indices of the total incidence of different diseases in the population though variations in admissions from month to month will shed some light on seasonal variations in prevalence. What the records will show, however, will be disease patterns in relation to sex, age and occupation, the frequency of certain complications and sequelae, and the frequency of certain types of injury in relation to various kinds of accident. All this will be information well worth having.

Other hospital statistics that are also being collected concern the mental hospitals and the mental deficiency institutions. Before long we hope to provide a great deal more information than has so far been available about the patients in these institutions, their social background, family history and so on, and the type of mental disorder from which they are suffering.

(2) *Survey of Sickness.*—As an index of the general state of the public health from month to month and from year to year the Survey of Sickness has been serving a valuable purpose ever since it began in 1943. Originally introduced so that the Government should have knowledge of any worsening of the health of the people under the stresses of war—black-out, food rationing, long hours of work, and so on—it has been continued since the war because it fills a gap in our knowledge of sickness incidence that cannot be readily filled in any other way. Hospital records cannot give a complete picture of sickness, since only a small proportion of people who are ill go into hospital; doctors' records, too, fail to tell the whole story since less than a third of the illnesses of which people complain cause them to go and see their doctor. Without some kind of survey it would be impossible to collect information about the majority of illnesses from which people suffer.

It has sometimes been suggested that the Survey of Sickness statistics must be accepted with great caution because they are based only on what the patient himself remembers and is prepared or is able to tell about his recent illnesses. Nevertheless, they have stood up well to all the tests that have been applied to them—for instance, comparison with Ministry of Food statistics of the incidence of diseases qualifying for special diets[8] —and for my own part I am fully satisfied that the Survey of Sickness does in fact provide reliable indices of sickness. Especially is this so in regard to variations from month to month in the prevalence of sickness, days of incapacity and visits by or to doctors, in regard to the broad diagnostic picture of the causes of illness, and in regard to differences among people by sex, age, occupation and income. The Survey method has certain limitations, of course. The data provided about the incidence of cancer, for instance, are almost certainly unreliable; so, too, I should imagine, are those in regard to conditions like venereal infections, chronic alcoholism and induced abortion; for such conditions some other method of ascertainment would have to be employed. It has never been claimed for the Survey of Sickness that it is the only way to collect morbidity data; sickness being as common as it is there will never be an only way. It is one way among several; but experience has shown that it is a useful method and that it provides information that cannot be obtained otherwise.

(3) *Cancer Registration and Follow-up.*—To fill the gap in our knowledge about the incidence of cancer—by that I mean all malignant neoplasms, not just the carcinomata—and to gauge the effectiveness of different methods of treatment, a system of cancer registration on a national scale was started in 1945, and last year (1949) some 50,000 new cases of cancer were registered at the General Register Office. By following up these registered cases for five years a great deal will be learnt about the survival of cancer patients and about the numbers who apparently recover under different forms of treatment. At present there is a bias among our registered cases towards patients treated by radio-therapy because the registration scheme was originally introduced under the auspices of the Radium Commission. Within a year or two, however, the surgically treated cases will be more fully represented and we shall have a fairly complete picture of diagnosed cancer in England and Wales.

(4) *The Notifiable Infectious Diseases.*—The General Register Office has been publishing statistics of infectious disease since 1893. A recent innovation of very great value has been the quarterly corrections of diagnosis and the age analyses that we

have been receiving from Medical Officers of Health since 1944. We now have over five years' data and it is becoming possible, as it has never been before, to see the national sex-age pattern of morbidity, as distinct from mortality, of the notified infections.

With regard to tuberculosis—medical officers of health are still, I hope, interested in tuberculosis—an extensive analysis of notifications for the years 1938–48 is now practically complete and will be published shortly.

We have recently started to consider how much statistical information can be got from the records of mass miniature radiography, and in the near future we shall be embarking upon an intensive analysis of these potentially valuable records. It is too soon yet to risk any prophecies about what is likely to emerge, but one matter on which we hope to get some further facts is the relationship between tuberculosis morbidity and particular occupations. We have also been considering the practicability of following up positive cases for a year or two to find out what has in fact happened to them after the miniature film has given the warning that something is wrong; so far, however, this is only an idea and the details have yet to be worked out.

Local Health Statistics

Medical Officers of Health have been told, and have been telling one another, quite frequently in the past two years, that the loss of several of their former responsibilities is an advantage in that it gives them opportunities that they lacked before "to study all the morbid conditions contributing to a high sickness rate or mortality in their area with a view to their prevention and control."[6] Whether or not there will be a flood of new epidemiological research from local areas I do not know—I am referring here to "general" epidemiology, not just the epidemiology of the infectious diseases—but if there is, it may well prove to be not the least profitable result of the National Health Service.

There are several good reasons why field epidemiological research by Medical Officers of Health should be of particular value. Three of these reasons are :—

(1) The variations of the social and environmental indices are often much wider *within* individual local areas, especially large towns, than *between* these towns, so that influences that are obscured when average index values for whole towns are used can be more readily identified.

(2) Although large numbers of cases are useful and sometimes essential if conclusive results are to be obtained, a more important attribute is that the data should be reliable—that what is called measles is in fact measles and not rubella, that what is called peptic ulcer is not cancer of the stomach. The closer, therefore, that the epidemiological research worker can get to his material, the more trustworthy the results ought to be.

(3) The medical officer of health is peculiarly well equipped for epidemiological research. There is, in fact, no one better equipped than he. He has himself received a special training that renders him eminently suitable to organise and to carry out research projects; he is provided with a well-trained staff who are intimately acquainted with their district and everything in it; and in various ways he is able to keep himself informed of important disease trends and fluctuations within his area—perhaps not as well as he would wish, but certainly better than anyone outside.

For these reasons I hope that Medical Officers of Health will seize their opportunity and launch the research programmes that, considering the potential value of such work, have perhaps not been as frequent in the past as they might have been, though of course there have been many notable exceptions. The valuable discussion on Field Epidemiology at this year's Health Congress of the Royal Sanitary Institute[7] should act as a stimulus.

At this point may I put in a special plea that in these research programmes into important diseases of every kind, the common infectious diseases should not be pushed aside and forgotten about in the enthusiasm for new pastures? There is much still to be learnt about the epidemiology of measles, whooping cough, scarlet fever and diphtheria and, indeed, of chickenpox, mumps and german measles. The problems of the periodicity of epidemics, the shape of the epidemic curve and the frequency of sub-clinical infections are far from being solved despite the efforts of Brownlee, Greenwood and Stocks, to name only a few. These problems are not purely of academic interest but are of very great practical importance. Some years ago Greenwood[8] expressed the opinion that the solution to these problems would not be found till a more intensive attack could be made by the mathematicians. It may be that Greenwood was right—he often was—but I think it cannot be too strongly emphasised that all the mathematicians in the world will never solve these problems unless they are given dependable data to work upon. It has always seemed to me a pity, to say the least, to perform elaborate mathematical calculations upon data that are incomplete or inaccurate or both.

Well-conducted field research into the epidemiological behaviour of the common fevers can still have great value even though the mortality of most of them is rapidly vanishing. The more we can learn about the habits of the relatively innocuous but very prevalent viruses, such as those of measles, rubella, chickenpox and mumps, the better placed we shall be for attacking the more serious ones such as poliomyelitis. The more we can learn now about influenza, the better we shall cope with the next pandemic. It will not be forgotten that it is now 32 years since the last pandemic, and we should be foolhardy indeed to imagine that the virus of influenza has completely changed its ways. Let us try too to get a clearer understanding of the mechanism of infection by the erythrogenic streptococci of scarlet fever now while they are tame. Some day they may try to become killers again.

Even if for a time these researches produce no startling results, at least they may throw light on the incompleteness of notification, and if, by careful case finding, the ratio of notified to actual cases can be accurately ascertained at different times and in different places, then notification statistics will be given added value. They will cease to be mere indices of trend, important as these are, and become indices of the absolute prevalence of the infectious diseases.

Sydenham[9] thought the way to study the behaviour of a fever was to "choose some large and populous place." Even though we have the notable example of Pickles[10] in recent years to show that Sydenham's directive need not be invariably followed, there are advantages in having a large number of cases for study, provided the study can at the same time be carefully made. It can be difficult, sometimes dangerous, and sometimes impossible to draw conclusions from a limited experience.

Now it may happen that the number of authenticated cases of a particular disease occurring within a reasonable time, even in a "large and populous place" are too few to yield significant results, and sufficient numbers can be obtained only by combining a number of areas and perhaps even all such areas in the country. A problem of this type has cropped up recently in connection with rubella during pregnancy and its tendency to cause congenital defects in the child. The evidence for this association, though highly suggestive, is not completely satisfactory from the statistical point of view, and it has been decided to investigate the matter as thoroughly as possible in order to determine exactly what proportion of "rubella" pregnancies do, in fact, result in congenitally defective children and how this number compares with that from normal pregnancies. As only a few hundred pregnant women in the whole of England and Wales are likely to suffer from rubella in the course of a year, only a nation-wide case-finding campaign covering practically all the expectant mothers in the country, together with an adequate number of controls, can be expected to yield a sufficiency of cases. An enquiry, in which the opportunity will also be taken to investigate the possible effects of chickenpox, measles, mumps and poliomyelitis has been initiated by the Ministry of Health and the central statistical work is being done by the General Register Office. With the support and approval of the Society of Medical Officers of Health, the Medical Officers of Health of all the Local Health Authorities have been asked to co-operate in the enquiry, this being considered the best way—perhaps the only way—of achieving the two requisites of adequate numbers and highly accurate records kept in accordance with a uniform plan.

Why I am especially interested in this enquiry is because it is, I believe, the first *ad hoc* statistical investigation, at any rate in recent years, in which the General Register Office and Medical Officers of Health have collaborated in this way, the former acting as the central statistical bureau and the latter supervising and co-ordinating the collection of data in the field. The opportunity of associating with Medical Officers of Health in this enquiry has been warmly welcomed by my Department, and I hope that further opportunities of a similar nature will arise in the future. It is not difficult to think of other pressing problems that can best or can only be solved by carefully co-ordinated enquiries on a nation-wide scale, and for such purposes the General Register Office and the Medical Officers of Health can constitute a powerful and effective combination.

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METROPOLITAN WATER BOARD

APPOINTMENT OF SENIOR ASSISTANT BACTERIOLOGIST

Applications are invited for the position of Senior Assistant Bacteriologist in the Water Examination Department.

Candidates must hold a degree in Natural Science from a recognised university and must produce evidence of a thorough knowledge and experience of bacteriology including the bacteriology of waterborne diseases. The candidates must also be capable of deputising for the senior bacteriologist.

The duties of the officer appointed will include the bacteriological examination of water in all stages of purification and such other analyses and duties in the department as may be allotted by the Director of Water Examination. The commencing salary will be within the range of £720-£50-£920, according to qualifications and experience, plus £80 per annum cost of living bonus.

The selected candidate will be required to pass an examination by the Board's Chief Medical Officer and to undertake in writing to join the Board's Superannuation and Provident Fund. The whole of the person's time will be required to be devoted to the service of the Board.

Applications stating age, present position, salary, qualifications and experience, accompanied by copies of not more than three recent testimonials, must be delivered to the undersigned in envelope endorsed "Senior Assistant Bacteriologist" not later than 10 a.m. on Saturday, September 9th, 1950.

Canvassing, directly or indirectly, will be held to be a disqualification and candidates should state in their applications whether to their knowledge they are related to any member of, or the holder of, any office under the Board.

W. S. CHEVALIER, *Clerk of the Board.*

Offices of the Board, New River Head, Rosebery Avenue, London, E.C.1.

POLIOMYELITIS IN A RURAL SCOTTISH COUNTY, 1947, 1948 AND 1949

By I. C. MONRO, M.B., D.P.H.,
Medical Officer of Health,
Combined County of Moray and Nairn

The year 1947 saw Great Britain involved in an outbreak of acute anterior poliomyelitis more extensive than any previously experienced. In England and Wales there were 7,800 cases of poliomyelitis and polio-encephalitis notified. This gives a rate of 18 cases per 100,000 of the population, whereas the previous greatest incidence was four cases per 100,000 in 1938. In Scotland, the outbreak was of greater severity. There were 1,434 confirmed cases, equal to a rate of 28 per 100,000, compared with the previous highest of 5·6 per 100,000 in 1928.

Some localities were heavily involved, while their neighbours were hardly affected. The combined county of Moray and Nairn was one of the former, having in 1947 over 50 cases in a population numbering between 50,000 and 60,000 approximating to a case incidence of 100 per 100,000. Its neighbours, Banffshire and Inverness-shire, with essentially similar populations, were relatively unaffected, the former having two cases and the latter 15, while the large Burgh of Inverness, with rather less than half the population had no cases at all.

There is no doubt that the main weight of the attack was felt in 1947, but its aftermath continued into 1948 and 1949, so that consideration has been given to the cases occurring in those years as well as in 1947.

In Scotland, as in England, the main incidence during the first 20 weeks of 1947 was in the urban and industrial areas. Cases occurred in or near all the main towns, Dundee excepted. The rural areas of the Highlands and Borders were free. The main epidemic rise did not clearly show itself until the 29th week, when notifications totalled 19. There was in fact an interval of approximately one week between the commencement of the sharp epidemic rise in London and Lancashire, and the same interval between Lancashire and Glasgow.

In Moray and Nairn, there were three distinct peaks of prevalence. The first, in the 33rd week of 1947, corresponded with similar peaks in Glasgow and Ayrshire, and the second, in the 36th and 37th weeks, corresponded with peaks in Edinburgh and Ayrshire. The third corresponded with the peak in Dumfriesshire in the 40th and the 41st weeks, and therefore with the arrest in the decline in Glasgow. After the 43rd week, notifications in all five areas continued steadily at a low level until the end of the year.

Geographical Features

The administrative county of Moray and Nairn lies on the southern shore of the Moray Firth. There is a coastal strip, approximately ten miles wide—the "Laich of Moray." To the south of this coastal plain is a hilly area from which descend three large rivers, the Nairn, Findhorn and Spey from west to East. The largest of these, the Spey, rises 90 miles to the south-west, and its valley provides a convenient line for road and rail communication to the south. A smaller stream, the Lossie, drains the hills close to the coast, and discharges into the sea midway between Spry and Findhorn.

The population is concentrated in the coastal plain, where the main towns lie. The estimate for 1947 was 54,774. Of this 83% was located in the coastal strip, and the remaining 17% was distributed in smaller communities in the upland areas, considerable tracts of which are virtually unpeopled.

The main road and railway from Aberdeen to Inverness pass through the coastal belt traversing the towns of Elgin, Forres and Nairn on their westerly ways, and are joined at Forres by main routes to the south.

The countryside depends on agriculture and fisheries for its prosperity, and in the summer months shares with other Highland and northern coastal areas in popularity with holiday-makers. In fact, the area described is essentially similar to numerous other rural and coastal counties in Scotland. There is no obvious factor in its situation, or the pursuits of its inhabitants to account for the abnormal prevalence of poliomyelitis in and after 1947.

Previous Experience of Poliomyelitis in Moray and Nairn

Notifications of poliomyelitis in Moray and Nairn totalled eight in the years 1930 to 1946 inclusive. The older generation of medical practitioners agree that there was increased prevalence around the years 1916 to 1918, another period of prevalence in the middle of the decade 1920 to 1929, probably associated with the years 1925 and 1926, and a further period of prevalence ten years later. The last-named appears in the six notifications in the years 1933 to 1938. There may have been rather more cases in this period than were notified. In respect of the prevalence in 1944, this may have been preceded by a slight prevalence of non-paralytic cases in 1942 and 1943. One case diagnosed as benign lymphocytic meningitis occurred in 1942. The findings in the cerebro-spinal fluid were consistent with this diagnosis, and also with one of poliomyelitis. No serological examinations were made. One other case was admitted about this time to the fever hospital with a diagnosis of encephalitis. The cerebro-spinal fluid was non-pathological, and the patient made a satisfactory recovery. This also could have been a case of poliomyelitis.

The Local Outbreak

The local outbreak was characterised by the occurrence of groups of cases in the towns of Rothes, Elgin, Forres and Lossiemouth, and to some extent in their environs. The outbreaks in these four towns are the chief components of the outbreak in the county as a whole, and will, therefore, receive individual consideration. The apparently unrelated rural cases will thereafter be described.

Cases in the Town of Rothes and its Environs

Between July 26th and August 6th, 1947, three cases occurred in the town of Rothes and four cases in the surrounding country. Two cases were abortive, two were non-paralytic and three were paralytic. The three cases in the town occurred in two houses approximately opposite each other in the High Street. In the one house there were a non-paralytic and an abortive case, in the other a paralytic case. The latter house was associated with a public garage which carried out other retail business and was therefore almost certainly in contact with the first household. Equally, both households were in contact with many others without apparently infecting them. The remaining cases occurred at two farms three miles north-east, and south of the town, respectively. At the former there were a paralytic and abortive case and at the latter a non-paralytic case, followed after an interval of four weeks by a paralytic. The connection between all these households may have been a sale of work held in connection with one of the churches in Rothes, and widely attended.

The three cases in the town of Rothes represent an incidence of approximately 220 per 100,000. The seven cases in Rothes and environs represent an approximate incidence of 350 per 100,000. No cases occurred in 1948 or 1949.

Cases in the City of Elgin and its Environs

This group is made up of 34 cases, which occurred in all three years under consideration. In 1947 there were eight paralytic cases, six non-paralytic cases and three abortive cases. The first of these took ill on August 10th, and others in each of the four following months. In 1948 there was one paralytic case and 12 non-paralytic cases. In 1949 three paralytic cases had occurred, along with one non-paralytic case.

The cases occurred in all parts of the town, though the fact that cases occurred close together in the High Street, and in the Ashgrove, a road on the southern outskirts, suggests that more than one epidemic focus had been encountered.

Only two rural cases are included in the 1947 group and they are linked geographically with the Ashgrove area. This limitation of rural spread is rather surprising considering its relative frequency in the areas around Rothes and Forres. It may be that more of the cases occurring in the deeply rural areas should be included in the Elgin group. The town is the county town, and the shopping centre for a wide rural area, as well as for Rothes and Lossiemouth. Its two picture houses draw audiences from far afield. The working population of the shops and offices is similarly drawn from a wide area, including the towns of Rothes and Lossiemouth, which, in this connection are virtually satellites. Confirmation of this view is to be found in the extent of public motor omnibus traffic in the area. Between Elgin and Lossiemouth, 1,200 passenger journeys are made daily in each direction, while between Elgin and Rothes 500 such daily journeys are made. Between Elgin and Forres the number of vehicles plying is compatible with 1,200 passenger journeys daily in each direction.

Multiple cases were less in evidence than in the town of Rothes, as in only two households was this feature present.

Over the whole period the incidence was at the rate of approximately 280 per 100,000 population. In the year 1947, exactly half the cases occurred, giving a rate of 140 per 100,000. The two subsequent years have shown declining rates, 108 and 33 per 100,000 respectively.

Cases in the Town of Forres and its Environs

Nineteen cases were confirmed from Forres and its environs. Eight of these were paralytic. Ten of the remaining eleven cases were non-paralytic. There was one fatal case of polio-encephalitis and no reported abortive cases.

No cases have been reported from this area since 1947. The onset of the first case was on August 23rd, 1947, and the last on October 20th, 1947, just two months later.

Multiplicity occurred in one household from which two patients were removed to hospital on September 28th and 30th. Their sister was employed in a local convalescent hospital, where another case occurred on September 19th. It is conceivable that the infection was transmitted by the inermediary from the hospital to the two children outside. At the same time it must be clearly recognised that the infection could have reached the farm, where the two cases occurred, independently of the hospital. There was, no doubt, the usual coming and going between the farm and the town three miles away.

The fatal case of polio-encephalitis was admitted to hospital on September 12th, 1947. She was employed, *inter alia*, as a milker for a small dairy herd. The milk from this herd was supplied to one mansion-house and four farm cottages. She first felt unwell approximately three weeks prior to admission to hospital, but continued at work until approximately one week prior to admission, that is to say until September 5th, 1947, or thereby. On September 23rd, 1947, or 18 days after the last occasion on which she carried out her dairy duties, the daughter of the cook in the previously mentioned mansion-house took ill. No other cases of illness occurred in the mansion-house, and no case of illness occurred in any of the farm cottages. There is evidence of a possible mode of transmission of the infecting agent, but no proof. Intercourse between the mansion-house and the town of Forres was considerable, and must be deemed a possible alternative mode of transmission.

Two of the cases were members of the personnel of a local service establishment. Dates of onset were September 8th, 1947, and September 27th, 1947. The former patient had several times visited Forres during the preceding weeks. The latter had been on ten days' leave, returning from Northamptonshire on September 24th, 1947. If, therefore, the formula $12{\cdot}2 \pm 1{\cdot}1$ be used, this patient was probably infected between September 14th and September 16th inclusive. That is to say, he may well have been infected away from Forres. Enquiries were made of the medical officer at this establishment, and he was able to say that direct contact between the two men was unlikely. Further, he pointed out that there was no increase in the reporting of minor ailments during the period of the outbreak in Forres, and deduced from that that the one patient was infected in Forres and did not bring the infection to the establishment, while the second was infected while away on leave, and also did not bring the infection into the establishment. The argument is attractive but inconclusive.

A further feature of the group of cases in Forres and its neighbourhood calls for remark. Of the 19 cases, five occurred

in the town, while the remainder occurred in the environs. Four out of these five urban cases were in the first five notifications. The rural cases therefore followed the urban. Furthermore, they occurred in a wide arc, embracing many square miles, round the southern and eastern sides of the town, with an occasional case to the north. This indication of centrifugal spread in one sector made it appear that there might be a carrier associated with one of the food delivery vans which are now an essential feature of country life. The fact that several of the cases occurred in considerable isolation gave weight to this suspicion. Enquiry, however, was disappointingly inconclusive. No food van could be singled out as contacting a substantial proportion of the rural cases. And none of the affected household was without substantial contact with the town of Forres in addition to that afforded by vans. As a rule, both parents made two visits each to the town every week. If the children were young they accompanied their parents. If older, while not necessarily accompanying the parents, they usually had substantial contacts with the town, often more than the adults.

The incidence in Forres was equivalent, approximately, to 110 per 100,000 population, and in the area involved, to 190 per 100,000, the service cases and establishment being excluded from the reckoning.

Cases in the Town of Lossiemouth

A most explosive outbreak occurred in Lossiemouth in September, 1947, and no further cases occurred in the town until May, 1949. The cases in question had a tendency to be grouped around the school, but in a small town of not more than 5,000 inhabitants with one large school, no case could be very far from the school, or for that matter, from any chosen centre in the town.

The onset of the first case was on September 2nd, 1947. One of the other cases took ill the same day, and the remainder on September 5th, 6th, 9th, 10th, 16th, 24th and 26th respectively.

There was a high proportion of paralysis in the cases occurring in 1947, there being six paralytic cases to only three non-paralytic. This is a reversal of the experience of the county as a whole. The paralytic cases tended to be of a fairly severe type.

Some weeks prior to the outbreak reports came from Lossiemouth that cases in which headache and vomiting had been prominent had been seen. All the patients concerned had been children, all had spent a day on the beach in the summer sunshine, and all had consumed ice-cream. This may be evidence of the occurrence of abortive cases in the area. Alternatively, it may only be evidence of the popularity and accessibility of the Lossiemouth beach on a fine summer day. The patients were, no doubt, domiciled in Lossiemouth and other parts of the county as well.

In the groups of cases associated with Rothes, Elgin and Forres, there has been evidence of spread into the surrounding countryside. This did not occur in the area of Lossiemouth. The location of the town, and the nature of its environs no doubt account for this. To the north lies the sea; to the east is a considerable belt of woodland; to the south lie a few farms and then the wide cultivated lands of the old Spynie Loch, now drained but unsuitable for building; to the west lies a similar wide expanse devoid of population, the airfield and golf course. Within this perimeter lie the town, a few farms, and the quarters for the personnel of the air station, and within this area the cases were distributed.

In no instance is more than one case known to have occurred in a household in Lossiemouth.

The incidence in Lossiemouth was equivalent to a rate of approximately 180 per 100,000 during the year 1947. The single case in 1949 represents a rate of 20 per 100,000.

Cases in Other Parts of the County Area

Fourteen cases occurred in other parts of the county area. Seven of these occurred in 1947 and the remainder in 1948.

The first case notified was from a farm cottage about three miles to the east of Lossiemouth, and with one abortive case and a case next door forms a small group. The circumstances are such as to call for detailed description.

The first case, a little girl of eight years, left home for Glenrinnes on her summer holidays on July 19th, 1947. She travelled by bus to Elgin and Dufftown, and thence made her way to Glenrinnes. In making this journey she passed through the town of Rothes. She returned from her holidays on July 26th, 1947, travelling by the same route. Her mother accompanied her on both journeys. The day, August 1st, 1947, was spent on the beach at Lossiemouth, and the child took ill that evening, and her mother at the same time. The following day, August 2nd, 1947, the child had substantially recovered, and went about her normal avocations. On August 3rd, 1947, she was again taken ill and remained confined to bed at home until her removal to hospital on August 6th, 1947, when paralysis had appeared.

In the farm cottage next door there lived, amongst others, twin baby girls aged nine months. On July 15th, 1947, the one twin was admitted to the Isolation Hospital, Elgin, with a diagnosis of pneumonia, which was confirmed. She remained in hospital until her discharge home on August 2nd, 1947. Before the end of July, 1947, her twin sister had taken ill, and was nursed in bed at home. On August 5th, 1947, she was admitted to the Isolation Hospital, Elgin, with a diagnosis of pneumonia, which was confirmed. She remained in hospital until discharged well on August 30th, 1947. Owing to her illness she was not in contact with the first case after the latter's return from holidays on July 26th, 1947. The child of eight, and the first mentioned twin, spent most of August 2nd in company and the first case was instrumental in bottle-feeding the first twin on that day. This was the only contact between the two. On August 11th, 1947, the first twin took ill, and on August 13th, 1947, she was admitted to the Isolation Hospital she had so recently left with paralytic poliomyelitis. The second twin did not suffer from poliomyelitis.

The first case, therefore, had contact with the first twin, and close contact at that, precisely nine days before the onset of the latter's illness, and after the onset of her own symptoms. She did not have any contact with the twin sister owing to the latter's illness. Apart from the child of eight, her mother and the first twin, no other cases were reported from the vicinity for some weeks. Prior to the onset of symptoms in the first case, there was no known case in the whole of Moray and Nairn. The evidence of commencing prevalence in the town of Rothes suggests strongly that the child of eight was infected in its vicinity, and not near home. If that is conceded, then there was no source of infection near home for the first twin, who was in any case isolated till the morning of August 2nd, 1947. The presumption that the first case infected the first two is strong, and is strengthened by the non-appearance of the disease in the unexposed twin. The latter, in fact, played the part of a control animal in an experiment, and what more suitable animal for the purpose than an identical twin?

The first twin developed symptoms on the ninth day after exposure, and paralysis on the eleventh day. This is the only instance of direct transmission from case to case. It is well to remark certain features of the case. The "recipient" was a child in arms, and the "donor" nursed and fed her, one of the most intimate human relationships. The "recipient" was newly discharged from hospital after an attack of pneumonia, with probably a depression in resistance as a result. The onset of illness had already occurred in the "donor." Experience of other virus diseases suggests that infectivity is at its height at the onset, immediately before it, or immediately after. It is fair to assume, therefore, that her infectivity was at its height. All the circumstances, therefore, seem to have conspired together to make the contact between the two children as effective as possible, with the one at her most infective and the other at her most receptive.

Cases in Isolated Rural Portions of the County

Only one case in 1947 occurred on the east bank of Spey. He took ill and was admitted to hospital on August 24th. His home is in a rather isolated corner of the county remote from bus routes. This perhaps accounts for the absence of spread in the locality. He is a grandchild in a household where the family is scattered through the country. There was the usual

family gathering in the early part of August, 1947. At least three visitors from the Glasgow area were in residence during the first two weeks of August, and a fourth, from Aberdeen, was in residence from August 11th to 18th. The assumption that one or other of these persons was the vehicle by which the infection reached the patient seems justified, but it is impossible to indicate whether the infection came from Glasgow or Aberdeen.

The next was a married woman, resident in a service establishment, fairly remote from Elgin. The onset took place on September 3rd, by which date only five cases had occurred in Elgin and area, only one of them being outside the town. No history remotely suggesting contact was obtained, nor was there anything to indicate a possible date of infection. No other case occurred subsequently in her vicinity. She had not been away from her quarters and must therefore have been infected within the area of the county.

One of the most severely paralysed cases was the only case in Nairnshire in 1947. Her epidemiological history is sufficiently startling and tragic to be retold. Symptoms made their appearance on September 26th, 1947, and she was admitted to hospital 48 hours later.

On September 18th, 1947, the patient's sister-in-law, who had died of poliomyelitis in Lanarkshire, was buried in Nairnshire. The patient's brother, husband of the deceased, naturally attended the funeral, and so did the patient herself. On September 30th, 1947, the child of the deceased, and niece of the patient, was confirmed to be suffering from poliomyelitis in Lanarkshire. The man, husband of the deceased, brother of the patient, and father of the child—all sufferers from the disease—was clearly a carrier of the infection, probably a primary carrier, responsible for infecting all three cases. He may also be regarded as an intermediary between his wife and his sister, the child having been infected by her mother. In any case he was associated with one fatal case, one severely paralytic case, and one case of unknown severity.

The next case was a boy in a residential school. The term commenced on September 26th, 1947. Part of the school routine during the first three weeks of a term is daily inspection, with ascertainment of temperature. On October 5th, 1947, he was found to be unwell and pyrexial. He was forthwith isolated in the school sanatorium. Two days later he was seen by a consulting physician who made a tentative diagnosis of poliomyelitis. The boy was removed to hospital in Aberdeen, where the diagnosis was confirmed. The patient was in contact with his fellow scholars for ten days. Neither then, nor later, was there any suspicion of another case in the school. The taking of temperatures continued, and under the circumstances any elevation would have been immediately investigated, but none was reported. Inquiry in Aberdeen elicited a curious little story. On September 23rd, 1947, or on a date very close to it, this boy met a friend in the street. On October 15th, 1947, the sister of this friend was admitted to hospital in Aberdeen as a confirmed case of poliomyelitis. She probably took ill a day or two earlier, say October 12th, 1947, that is to say 16 days after the opening of school, and 19 days after the contact with this girl's brother. It is rather hard to envisage a boy being sufficiently infective to pass the disease to his friend during a casual meeting in the street, so that it developed on the 12th day, and yet being insufficiently infective to infect simultaneously his sister, who lived under the same roof. She did not develop the disease for a further week. The connection between the cases is hard to see.

Two cases occurred in Nairnshire in March, 1948. They presented the usual blank wall so far as the ascertainment of clear epidemiological data are concerned. Neither was in contact with the other, or with a case or contact in another area. The only definite finding was that a few cases of poliomyelitis had occurred in eastern Inverness-shire at the same time.

Two cases occurred in the large village of Fochabers in July and August, 1948. No history of mutual contact could be secured, nor of association with a case or contact outside the area. One of them had undertaken an extensive motor journey in the days immediately preceding the onset of his illness.

Two cases of some epidemiological interest occurred a few miles from Elgin in October, 1948. In the first place they are brother and sister. They come of a large family, to which there is an annual addition. This family is one of the problem families of the area. Their home is always a slum, with filthy beds and next to no other furniture. Clothing is always foul and inadequate. They have not been vaccinated or immunised. They suffer interminably from infestation with pediculi and sarcoptes. Such a family's exposure to all ordinary infecting agents must be continuous and prolonged.

At the time in question they were resident in part of an isolated, aged, and decrepit farmhouse. The water supply they chose to use was drawn from a neighbouring burn. This burn, some three miles higher up its course, received the overflow from the septic tanks of a country school serving some 150 scholars. One of these at all relevant times was the brother of a poliomyelitis case. It is remotely possible that this boy was, for a time, an alimentary carrier, and that the virus was transmitted to the school by him. From the school it may have made its way via the septic tanks and burn to the patients' water supply. I find it extremely difficult, in terms of present-day knowledge, to account for the delay in transmission from the school to the patients. This hypothetical mode of spread is therefore put forward as a very tentative explanation.

Areas Not Affected

The discussion has already shown that the main centres were the towns of Elgin, Forres, Lossiemouth and Rothes, with a certain dispersal into the corresponding landward areas. These four towns lie between the River Spey on the east, and the River Findhorn on the west. Up to the end of 1947, one case had occurred east of Spey, and one west of Findhorn. Since then, two cases have occurred east of Spey and two west of Findhorn. Virtually, therefore, all the cases have occurred in a coastal strip 20 miles from east to west, and ten miles inland from the sea. This area includes the main centres of population, but does not take in some quite substantial sections of the populace. Furthermore, even in this rectangle, there are substantial pockets as yet untouched. Firstly, to the east of Elgin and Lossiemouth, and west of Spey, is an area of 25 square miles with a populace of 5,000 so far unaffected. Secondly, there is a similar area with a larger population, lying to the north-west of Elgin—the last case of 1949 was on the edge of this area. Thirdly, there is a gap between the cases around Forres and those around Elgin and in it lies a village, the school in which is attended by over 200 pupils from a farming populace.

There are therefore plenty of chances for the involvement of unaffected populations in this area, though the main centres now appear to have been saturated.

Lines of Infection leading to Moray and Nairn

Inquiries revealed that eleven cases in 1947, and two cases in 1948, had come to this county within a few days of the onset of symptoms. Several of these cases were local residents who had been away on holiday in other areas, and who made double journeys within the period. Others were true incomers to the area. These patients had been in Aberdeen, Aberdeenshire, Ayrshire, Banffshire, Dumfries, Glasgow, Lanarkshire, Northamptonshire and Surrey. In seven instances it seems clear that the infection was imported from one of the areas named. In the remainder there was the possibility that infection had taken place locally prior to going on holiday, in addition to infection while on holiday.

Age and Sex of Cases

The age and sex of victims in regard to the outbreak in Moray and Nairn is best shown in tabular form (Table I).

This table shows that male cases preponderated over females in the proportion 4 : 3. This preponderance is most marked in the age group 1 to 4 years, amongst paralytic cases. Non-paralytic cases show a wider range of age groups showing male preponderance, extending to every age-group except that of 15 to 24 years where there is equality. Abortive cases show near-equality.

The age of patients also makes an interesting study. Briefly, half the cases are in the age groups one to four years, and

TABLE I

CONFIRMED CASES OF POLIOMYELITIS IN MORAY AND NAIRN BY AGE AND SEX

Age groups	Paralytic		Non-paralytic		Abortive		Total	
	M.	F.	M.	F.	M.	F.	M.	F.
Under 1 year ...	2	2	1	—	—	—	3	2
1–4 years ...	8	3	3	—	2	2	13	5
5–14 „ ...	2	5	10	6	1	—	13	11
15–24 „ ...	4	3	2	2	—	—	6	5
25 years and over	3	3	10	8	—	2	13	13
Total	19	16	26	16	3	4	48	36
Grand total ...	35		42		7		84	

five to 14 years; and nearly one-third are in the age group 25 years and over. This latter figure results from the high number of adults in the non-paralytic group.

Comparison with the figures for Scotland as a whole is also best made by converting the figures of local incidence to percentages (Table II), and comparing them with those for Scotland (Table III).

TABLE II

PERCENTAGE INCIDENCE IN AGE GROUPS

Age group	M.	F.	M. & F.	M.	F.	M. & F.
Under 1 year ...	7·5	5·9	6·82	6·25	5·6	5·4
1–4 years ...	36·2	32·0	34·34	27·11	13·9	21·4
5–14 „ ...	34·2	33·1	33·71	27·11	30·4	28·6
15–24 „ ...	12·2	12·63	12·63	12·50	13·9	13·1
25 years and over	9·9	12·50	12·50	27·11	36·1	30·9

There is a substantial difference between the figures in the age-group one to four years, where the figures for Scotland exceed those of Moray and Nairn, and in the age-group 25 years and over, where the reverse occurs. The difference between the sexes in the several age-groups appears to be insignificant.

The interpretation of these figures is that persons of all ages, in Moray and Nairn, were more susceptible to poliomyelitis than were the inhabitants of Scotland as a whole. Scotland, therefore, responded as a largely "unsalted" community, Moray and Nairn responded in the same way, but to a more marked extent.

Multiple Cases

Eight instances of multiple cases in the same household are recorded. Multiple cases are therefore not very common, though equally not very rare. Only in two instances was there more than one frank case in the household at once. In one instance a second frank case appeared sufficiently long after the removal of the first to render other sources of infection possible. In passing, it is of interest to note that the two cases were Irish farm labourers, who had arrived at this farm a few weeks previously. The fact that they were selected by the disease suggests that they may have been even more susceptible than the highly susceptible indigenous population. The explanation that the first case infected the second seems the most likely, and bears out the suggestion of higher susceptibility.

In all the remaining instances, the abortive cases were only brought to light by inquiry. If they, and the doubtful multiple just described are disregarded, we find that two instances of multiplicity occurred in respect of 75 households, or in under 3%, indicating a low degree of infectivity in so far as the individual case is concerned.

There were only eight instances of connection between definite cases. In two of these, the evidence favours the direct spread of the disease from case to case. In two more, there are adequate grounds for pointing to a carrier, or to one of a group whieh contained a carrier. In the remainder, possible modes of transmission have been pointed out. The weakness of these hypothetical modes is apparent on the most cursory study of the circumstances. They are only included because in none of the remaining cases was it possible to detect any linkage whatever. An improbable link is thus thrown into a position of prominence.

The conclusion to be drawn from the facts and speculations put forward can only be that the case of poliomyelitis is relatively lacking in infective power. This view receives strong support from the fact that during the height of the outbreak in 1947, when a score or more cases were in hospital and new ones being frequently admitted, none of the staff of the isolation hospital—medical, nursing, domestic or outside—was affected by the disease, nor by any symptoms which could be considered as due to it. I myself was the only casualty. The onset of my illness coincided with that of several other cases in the town, and with a time when there were no cases of hospital, and was in any case nine months after the weight in the 1947 attack.

TABLE III*

SCOTLAND, JUNE 29TH, 1947, TO NOVEMBER 15TH, 1947. POLIOMYELITIS NOTIFICATIONS BY AGE, SEX, ETC.

Age-groups	Counties			Cities			Other Large Burghs			Scotland		
	Male	Female	M. %	Male	Female	M. %	Male	Female	M. %	Male	Female	M. %
Under 1 year	25	16	(61)	32	17	(65)	9	9	(50)	66	42	61·1
1–4 years ...	137	86	61·4	139	115	54·7	42	25	62·7	318	226	58·5
5–14 „ ...	147	101	59·3	114	100	53·3	39	33	54·2	300	234	56·2
15–24 „ ...	67	32	67·7	32	42	43·2	8	19	(30)	107	93	53·5
25 years and over ...	46	50	47·9	32	48	40·0	9	13	(41)	87	111	43·9
All Ages ...	422	285	59·7	349	322	52·0	107	99	51·9	878	706	55·43
	The above numbers expressed as percentages of column totals											
	M.	F.	M. + F.	M.	F.	M. + F.	M.	F.	M. + F.	M.	F.	M. + F.
Under 1 year	5·9	5·6	5·8	9·1	5·3	7·3	8·4	9·1	8·7	7·5	5·9	6·82
1–4 years ...	32·5	30·2	31·5	39·7	35·7	37·9	39·3	25·3	32·5	36·2	32·0	34·34
5–14 „ ...	34·8	35·4	35·1	32·6	31·1	31·9	36·4	33·3	35·0	34·2	33·1	33·71
15–24 „ ...	15·9	11·2	14·0	9·1	13·0	11·0	7·5	19·2	13·1	12·2	13·2	12·63
25 years and over ...	10·9	17·5	13·6	9·1	14·9	11·9	8·4	13·1	10·7	9·9	15·7	12·50

* Quoted from the *Health Bulletin* issued by the C.M.O., Dept. of Health for Scotland (January, 1948), **6**, 1, 7.

Clinical Features

The main symptoms are well enough known, and do not call for recapitulation. The frequency of their occurrence is shown in the accompanying table. It is as well to bear in mind Howe's dictum on symptomatology[2]. He said, "It may already be clear that there is no such nicely defined entity as paralytic poliomyelitis and that each patient presents a melange of signs and symptoms indicating damage to various parts of the C.N.S."

TABLE TO INDICATE THE PERCENTAGE FREQUENCY OF OCCURRENCE OF SYMPTOMS IN CASES IN WHICH A DIAGNOSIS OF POLIOMYELITIS WAS ENTERTAINED

	Paralytic	Non-paralytic	Doubtful	Not poliomyelitis
Subjective				
Headache	73	88·1	92	75
Muscle pain or tenderness	70	40·5	43	26
Vomiting or nausea ...	47	45·3	57	26
Photophobia	9	16·7	14	5
Vertigo	6	26·2	0	0
Objective				
Pyrexia	87·5	83·8	100	75
Biphasic	13	11·6	14	0
Rigidity :				
Neck	78	87·2	78	37
Spine	66·5	64·3	36	5
Other muscles	15	4·8	0	5
Head retraction	6	16·7	0	5
Kernig's sign	3	16·7	14	5
C.S.F. :				
Cells	60	53·9	0	17
Protein	40	34·5	0	17
Pressure	56	41·4	17	16
Reflexes :				
Tendon	51·5	57·2	36	10·5
Cutaneous	19·5	33·4	21	10·5
Mental functions :				
Drowsy	22	14·3	0	10·5
Irritable	16	11·9	14	10·5
Urine :				
Incontinent	19	4·8	0	0
Retention	12·5	4·8	7	5
Tremor :				
Skeletal muscles ...	19	4·8	7	16
Nystagmus	3	2·4	7	5
Faucial angina	19	11·9	21	37

On one point a clear opinion has been formed, all cases, however slight, should be hospitalised for observation. By this means the case of tuberculous or other meningitis is differentiated early. If not hospitalised there is a real chance of fatal delay.

Incidence Required to "Salt" a Population

In respect of the year 1947, the following local intensities were reached :—

	Cases	*Rate per* 100,000
Rothes Area ...	7	350
Elgin Area	17	140
Forres Area ...	19	190
Lossiemouth Area ...	9	180

In the areas of Rothes and Forres, no further cases have so far occurred. In Lossiemouth a single case occurred in 1949, and another has occurred in 1950. In the Elgin Area, the incidence in 1948 and 1949 equalled that of 1947. It is too early to say that there will be no cases in 1950.

The foregoing suggests that, in any one year, an incidence of 200 per 100,000 will protect for some time. Not only that, but if this figure is reached quickly the herd immunity is more firmly established, and that at a relatively lower incidence rate. It would be interesting to apply this formula to other outbreaks, *e.g.*, that described by Hargreaves[3] in respect of Truro in 1949. In passing it may be remarked that all local public water supplies gave satisfactory analyses during the period in question, and yet the outbreaks occurred and stopped.

I am indebted to the Senatus of the University of Edinburgh for permission to publish this paper, which is adapted from a document in their possession.

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[1] CASEY, A. E. *J. Amer. Med. Ass.*, **33**, 1083.
[2] "Viral and Rickettsial Diseases of Man." Edited by T. M. Rivers. Page 247.
[3] HARGREAVES, E. R. (1950). *B.M.J.*, **1**, 879.

CORRESPONDENCE

JOB ANALYSIS OF PUBLIC HEALTH NURSING

To the Editor of PUBLIC HEALTH

SIR,—You will remember that our original letter concerning the above analysis was circulated to medical officers of health on September 12th, 1949, together with various other documents. It was then proposed that a survey of the work of the public health nurse should be undertaken during one week of each of four separate quarters of the year, the first week to be completed on March 26th last; 93% of the health authorities in England, Wales and Scotland took part and, with a few exceptions, the co-operation from all members of staff concerned was most satisfactory, resulting in the return of 83% of completed forms and many helpful explanatory notes.

The Trustees are very appreciative of the willing assistance which has been given from so many of those concerned, for they realise that the extra work involved for the medical officers and the nursing and clerical staff is considerable.

It is now proposed that the second week of survey should be in November next and it is anticipated, assuming the response to be equally good on this occasion, that it will not be necessary to extend to a third and fourth week as was originally suggested. The procedure for the second week will be similar to that of the first.

In the course of the next month or six weeks we shall be writing to all medical officers who co-operated during the first week of survey asking that we may again have their assistance and that of their staff in this final week.

During the past year the interest in and support of your Society to this whole project has been most valuable and very much appreciated. We should like to feel that we may rely on your co-operation during this second and last part of the survey.

Yours sincerely,

M. E. JOHNSTON.
Administrative Assistant,
Public Health Enquiry.

The Nuffield Provincial Hospitals Trust,
12 and 13, Mecklenburgh Square,
London, W.C.1.

July 7th, 1950.

CENSUS OF POPULATION, 1951

A draft Order in Council (the Census Order, 1950) has been laid before Parliament, which contains the outline of the proposed arrangements for the next Census in Great Britain. The responsibility for seeing that they are carried out will fall upon the Registrar General and upon the Registrar General for Scotland.

This will be the 15th nation-wide Census to be taken in this country. The first was in 1801 and the sequence has since continued at ten-yearly intervals until it was broken by the war in 1941. The draft Order proposes that the next Census shall be held on April 8th, 1951. This date has been chosen so as to ensure that as many people as possible will be in their homes and is in a period when longer daylight and better weather conditions may be expected. Censuses are expected to be held on the same day in Northern Ireland, the Channel Islands and the Isle of Man.

Returns are required to be made for every person alive in the country at midnight ending Census day and for certain other persons who, though outside the country at that time, are normally resident in the country—for example, persons on a fishing or coastwise voyage. Particulars will be obtained of all Service men and women as well as of civilians.

All the information collected at the Census is strictly confidential and is used to provide general statistical information only. Severe penalties are provided by law for improper disclosure. The Census has no concern with individuals as such and is not used in any way as a personal check-up on people's activities: it is concerned, in a purely impersonal way, with facts and with the comparison of facts for the country as a whole and for the various parts of it.

The enquiries proposed for 1951 are generally on accepted lines

but somewhat more extensive than in 1931, when the programme was unusually restricted because of the economic depression and of the expectation of a Census in 1936. This expectation was not, in fact, fulfilled and with the further gap caused by the War, the absence of up-to-date figures is causing difficulty. Besides, present-day administrative needs demand more comprehensive information than has previously sufficed.

It is proposed to obtain information on the distribution of the people by area, sex, age and marital condition; the size and composition of households; where people were born, where they live and where they work; what their nationality is; their occupations and industries; whether they are still at school, college, etc., or, if they have finished whole-time education, at what age they finished; whether the dwelling is structurally separate, how many rooms it has and whether the household has or shares a piped water supply, a kitchen sink, a cooking stove, a water closet and a fixed bath. In the case of married women under 50 it is proposed to ask the date of marriage and the number of children.

The organisation will be on lines similar to those followed in 1931, which are described in the "Census of England and Wales, 1931: General Report," published last March. The central clerical staff required may amount, at the peak, to some 600 but will not be drawn from the London area. The local registrars of births and deaths (of which there are about 1,200 in England and Wales) will, as on previous occasions, act as the local Census officers, (assisted in case of emergency by the Superintendent Registrars acting as honorary advisory officers). The registrars' areas will be divided up into enumeration districts (of which there may be as many as 50,000) and an enumerator will be recruited, in due course, for each such district by the Census officer. The enumerators will not be engaged at present, but further announcements will be made in about six months' time concerning their recruitment. While the registrars will be responsible for the local operations, the Registrar General has asked all local authorities to help them in all necessary and desirable ways and particularly in the adequate naming and numbering of streets in new or reconstructed urban areas.

In 1931 the total additional cost of the Census operations was about £400,000. It is obvious that the cost will be greater in 1951.

PROTECTION OF CHILDREN FROM TUBERCULOSIS

The Minister of Health, in Circular 64/50 of July 3rd, 1950, states that certain recommendations have been made to him by the Joint Tuberculosis Council regarding the protection of organised groups of children against the risk of infection by adults suffering from tuberculosis. These recommendations are to the following effect:—

(1) No person with respiratory tuberculosis should be engaged for employment which involves close contact with groups of children unless and until the disease is certified as arrested. A candidate for such employment should therefore not be engaged without a medical examination, including an *x*-ray examination of the chest.

(2) Persons whose employment brings them into close contact with groups of children should have an *x*-ray examination of the chest annually.

(3) If a person while thus employed is found to be suffering from respiratory tuberculosis, such employment should at once cease, and not be resumed until two consecutive medical certificates are given, the first stating that the disease is no longer active, and the second (after a further interval of six months) stating that the improvement in the general and local condition has been maintained—both certificates being based on *x*-ray and bacteriological, as well as clinical, investigation. After resumption of employment similar investigations should be carried out at three-monthly intervals for the first year and six-monthly intervals for the next two years.

(4) If any unusually high incidence of respiratory or non-respiratory tuberculosis occurs in an organised group of children a full investigation of the staff employed should at once be undertaken.

The Minister agrees with these recommendations, and in view of his general responsibility for the public health and his particular concern in measures to combat tuberculosis, is anxious that everything possible shall be done to give effect to them. He asks the Council accordingly to do all they can to have the recommended measures carried out for the protection of groups of children under their care in their capacity as local health authority, including children in day nurseries provided under section 22 of the National Health Service Act, 1946.

It is not expected that local health authorities will have difficulty in carrying out the first and third recommendations, the principle of which was embodied, so far as nurseries are concerned, in the Minister's Circular 111/44 issued on August 30th, 1944.

The Council may not find it easy to put into full effect the second recommendation, with regard to group *x*-ray examination of the staffs concerned, in view of the numbers of persons concerned and the pressure on *x*-ray facilities; but the Minister is anxious that authorities should do their best to make comprehensive arrangements. The *x*-ray examinations might be made at hospitals or chest clinics, or through a mass radiography unit, and authorities should consult Regional Hospital Boards as to ways and means of arranging for these examinations. Where arrangements are made for individual examinations at hospitals or chest clinics fees will be payable by the Council (except in the cases arising under (4) above—examination of contacts) but the cost of these will rank for Exchequer grant as expenditure in connection with the prevention of tuberculosis under Section 28 of the National Health Service Act.

THE TUBERCULOSIS SERVICE

The following was issued by the Ministry of Health on July 8th, 1950, as Circular RHB(50)64 : BG(50)58 :—

The Minister has sought the views of his Tuberculosis Standing Advisory Committee on the operation of the National Health Service in connection with tuberculosis. They have made certain recommendations which he feels it would be possible to act upon forthwith, as matters of organisation, without going beyond the limitations which the present need for economy imposes. These are dealt with in the following memorandum which the Minister is sending also to local health authorities, having regard to the responsibilities of both in different aspects of the tuberculosis services and to the necessity for the closest co-operation between them if these are to work efficiently as an essential entity. The importance of the part to be played by general practitioners in the campaign against tuberculosis also needs to be borne in mind.

In-patient Beds

1. The most pressing problem is the long waiting list for institutional treatment and the consequent lapse of time between diagnosis and admission to such treatment. Many more beds must be made available quickly, without waiting on progress in making good the lack of staff which is a major cause of the present shortage of accommodation. The Minister, with the agreement of his advisory bodies, deems it necessary to augment the insufficient resources of sanatoria and tuberculosis hospitals by using a proportion of beds in general hospitals for tuberculous cases. He, therefore, asks Regional Hospital Boards and Boards of Governors to apportion for the admission of respiratory tuberculosis patients as many beds as reasonably possible in suitable general hospitals. It is desirable that they should be in a separate section or block, and in any event in separate wards. Boards are also asked to consider to what extent they can arrange to use beds in isolation hospitals not required as essential epidemic reserves. The Minister would propose to invite reports from Boards in due course about the arrangements they have been able to make in these matters.

2. With the present shortage of beds the available accommodation must clearly be used as advantageously and economically as possible. The use of beds should be limited as far as practicable to recoverable cases. Patients for whom further active treatment is unlikely to be of avail, but whose condition or circumstances do not permit of discharging them, should if possible be provided for in accommodation distinct from that for cases under active treatment; but this should be only an administrative distinction, with discretion in giving effect to it so that difficulties do not arise from overt classification of certain cases as beyond remedy.

3. It will assist in making the full and best use of institution beds if there is central oversight of admissions and discharges by headquarters medical staff of the Regional Board through a bed-bureau system. In some parts of the country (notably the London area) inter-regional organisation will doubtless need to be considered.

4. There should be a check on any tendency to retain patients in institutions longer than is justifiable. Regional Boards should consider whether they have adequate arrangements for keeping under expert medical review the length of stay in their several sanatoria or tuberculosis hospitals.

5. Boards should make themselves familiar with a scheme at present operating in connection with the Central Middlesex Hospital and a neighbouring chest clinic which contains rest and collapse therapy in the home with short periods of in-patient treatment. A system of this kind depends on local conditions and resources, but it is clearly one which may prove suitable in some areas as an expedient for alleviating a local insufficiency of institutional beds.

6. The Minister has sought the views of the appropriate Standing Advisory Committees on the arrangements which might be made to second student nurses to sanatoria, and any further advice which can be given to safeguard the health of nurses engaged in the nursing of tuberculosis and hopes that he may be able shortly to issue further guidance to hospital authorities based on their advice.

Chest Clinics

7. Attention should be given to ways in which the work of chest clinics can help to relieve the pressure on institutional beds. A high standard of clinical judgment is necessary to avoid recommendation of institutional treatment for cases in which it is not essential and for which domiciliary care would suffice. Selection at this stage should be aimed at using the special treatment available in institutions only for those cases best able to benefit from it and so avoiding the use of such treatment when consequential complications may only protract the stay in the institution.

Every effort should be made to discover active tuberculosis at the earliest stage and to give the closest attention to contacts and the ascertainment amomg them of non-reactors to tuberculin with a view to raising their immunity by B.C.G. vaccination. Chest physicians will recognise that it is important to concern themselves no less with prevention and after-care than with their clinical work; and that it is necessary to give sedulous attention to case-finding and the supervision of the tuberculous family, including visitation in the home.

Mass Radiography

8. Mass Radiography is of first importance in case-finding, and in discovering latent infective cases among groups of the population so as to check the spread of infection. There should be the closest co-operation between Regional Boards and local health authorities in applying mass radiography to groups in which significant tuberculosis is most likely to be found. A local health authority should be informed by the Board of all surveys arranged in the authority's area, and also of the general results of the surveys. There should also be co-operation with regard to propaganda regarding mass radiography.

The system should not be regarded as a diagnostic service independent of the chest clinic service, and the medical officer in charge of a mass radiography unit should be on the staff of a chest clinic with responsibility for clinical sessions there. It is desirable that a period of duty with a unit should form part of the training of a chest physician.

So far as resources permit, the work of a mass radiography unit should include periodical repeat examinations of selected groups.

Resettlement of the Tuberculous

9. The occupational resettlement of the tuberculous is part of their after-care. It needs to be closely co-ordinated with the treatment of the individual case and, therefore, to be no less the concern of the chest physician than the clinical management of the case. The value of village settlements in this field has long been recognised; but the extent to which the need can be met in this way is limited, and other methods also need to be followed. Local health authorities, with the participation of chest physicians in their preventive and after-care functions, can do much by closely associating themselves with the work of Ministry of Labour and National Service officers in connection with the Disabled Persons (Employment) Act.

There is no better way of consolidating the good effects of sanatorium treatment than for the patient to undertake work under sanatorium conditions. Tuberculous persons should, therefore, be considered wherever possible in staffing tuberculosis institutions. The Minister hopes that he may shortly be able to issue further guidance as to the terms on which ex-patients not yet capable of full-time work may be engaged.

Open-air Schools

10. The scope of prevention and rehabilitation extends to children who are, or are at risk of being, tuberculously affected. In this field a particularly important part can be played by open-air schools whether residential or for day scholars, provided that the right type of case is admitted to them, which depends on skilled diagnosis and accurate assessment of the clinical needs of the individual child coming to the notice of the chest clinic. Co-operation between the hospital paediatric service, the general practitioner service, child welfare authorities and education authorities is essential.

The National Old People's Welfare Committee (associated with the National Council of Social Service), 26, Bedford Square, London, W.C.1, is organising a six months' course for prospective wardens or matrons of old people's hostels, to begin in September, 1950. The course will include eight weeks' theoretical training in London and 16 weeks' practical training (*a*) in selected Old People's Homes, (*b*) in the Geriatric Unit of a Hospital. Fee £40. In certain cases, thanks to the generosity of the National Corporation for the Care of Old People, grants-in-aid may be given.

BIRTHS, MARRIAGES AND FERTILITY IN 1948

The Civil Tables (Part II) of the Registrar General's Statistical Review* for 1948, issued on June 2nd, reveal that, whilst the birth-rate fell from the high figure reached in 1947, it was maintained at a considerably higher level than in the immediate pre-war years and that the stillbirth-rate was again the lowest recorded in this country up to that time. The marriage rate was maintained at a comparatively high level but the number of divorces was 27% lower than in the previous year.

Population.—The national population (inclusive of armed forces and merchant seamen at home and abroad) for 1948 was 43,502,000 compared with 43,050,000 in 1947, an increase of 452,000. A feature of this report is the inclusion for the first time since the war of tables analysing the population by regions and by marital condition in addition to the usual tables showing the distribution of the national population by sex and age.

Births.—There were 775,306 live births in 1948, which represented a birth-rate of 17·8 per thousand total population. This was a decrease of 2·7 per thousand from the previous year's rate when there were 881,026 live births. The 1947 rate of 20·5 per thousand was the highest since 1921 and despite the fall, the 1948 birth-rate was still considerably higher than that of the immediate pre-war years, the average rate for the years 1936–40 being 14·7 per thousand.

There were 41,574 illegitimate live births compared with 46,603, 53,919 and 63,420 in the years 1947, 1946 and 1945 respectively. Shown as proportions of the total numbers of live births, these figures represent 5·4, 5·3, 6·6 and 9·3% respectively.

Stillbirths numbered 18,399, representing a rate of 23·2 per thousand live and still births compared with 21,795 and a rate of 24·1 per thousand in 1947. The rate in 1948 was the best ever recorded in this country up to that time, but it is now known that the provisional rate for 1949 shows a further improvement to 22·6.

Marriages.—In 1948, marriages numbered 396,891, producing a rate of 18·2 persons married per thousand total population, compared with 18·6, 18·0 and 18·7 in the years 1947, 1946 and 1945 respectively.

The most popular age for marrying was 23 for men and 21 for women—the same as in 1947. There were 20,005 men and 90,316 women married at ages under 21; 211 men and 32 women married at ages over 80, seven of the men and two women being over 90 years of age.

Fertility.—44·1% of the legitimate maternities during the year were to mothers with no surviving previous children, 30·7% to mothers with one surviving previous child and 13·3 to mothers with two. There were 9,687 maternities resulting in multiple births, of which two were quadruplets and 88 were triplets. All the quadruplets were born alive.

Of about 112,000 confinements which took place within eleven and a half months of marriage, some 62,000 occurred within eight and a half months, and of these about 42,000 occurred within six and a half months of marriage.

Divorces.—The number of decrees *nisi* made absolute during 1948 was 43,698, compared with 60,190 in 1947, 30,298 in 1946, and a yearly average of 8,288 for the ten years 1936 to 1945.

During the year 16,619 petitions were filed at the Divorce Registry in London and 21,270 at the District Registries. Of the London petitions, 6,691 related to childless marriages, 5,350 to marriages with one child, and 2,807 to marriages with two children; 8,170 of the marriages had lasted for ten years or more and of these 2,446 had lasted 20 or more years.

The Child Welfare Exhibition

The National Baby Welfare Council announces that it has been presented by the Institute of Infant Welfare Fund with its permanent and travelling child welfare exhibitions. The permanent exhibition will be remembered by many when it was stationed at 117, Piccadilly. Unfortunately at the outbreak of war it was impossible to carry it on at that address and it is now some time since those interested in maternity and child welfare could view it, or since local authorities could have the benefit of the travelling part. For this gift the National Baby Welfare Council is indebted to the Trustees of the Institute of Infant Welfare Fund, and to Miss Honor Keating, honorary secretary to the Trustees and one-time organiser of the exhibition, and her band of enthusiastic workers for their invaluable help in sorting and arranging the various exhibits in their new home. The exhibition includes sections on food, clothing, dentistry, midwifery, nursery hygiene and so forth. It is housed at the offices of the National Baby Welfare Council 31, Gloucester Place, London, W.1, where before long all those interested will be able to view it. Due notice will be given as soon as the travelling sections are available.

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*H.M.S.O. Price 4s. 0d. net (or by post from P.O. Box 569, London, S.E.1, price 4s. 3d.).

BOOK REVIEWS

Canned Foods. By J. G. BAUMGARTNER. (Pp. 278, 32 illustrations. Price 15s.). 3rd Ed. London: J. & A. Churchill, Ltd., 1949.

The author is bacteriologist to Messrs. Crosse & Blackwell, so is in direct contact with the subject of this book. This is a third edition within six years, suggesting the appreciation with which it has been received and which it thoroughly deserves. In size it is small but it is written with so much economy of words and absence of padding that it contains a surprising mass of information. It is up to date and reliable.

It is essentially a laboratory guide to the bacteriology of canning and only sufficient space is devoted to the technical side to inform the laboratory worker of the essential principles. The bacteriology of canning involves numerous specialised problems as can be seen from some of the titles of the chapters. Examples are the chapters on control of spoilage micro-organisms, principal spoilage organisms in canned foods, effect of heat on micro-organisms, principles of heat processing and the types of spoilage.

Public health readers are mainly interested in the possibility of bacterial infections from canned food and, while this is not discussed in detail, chapter XI is devoted to it and is generally accurate; but the statement of Laing and Shinn, which the author appears to accept, that canned foods are beyond suspicion as vehicles in the transmission of staphylococcal food poisoning, is of very dubious accuracy. The author does, however, qualify this a few pages later.

Laboratory workers in this field will find it invaluable while, as a side issue, the information given demonstrates how scientific and reliable has become the control of canned foods.

Sight, Light and Efficiency. By H. C. WESTON, F.I.E.S. (Pp. xiv) + 318, 132 illustrations. Price 42s.). London: H. K. Lewis & Co., 1949.

The author, Mr. H. C. Weston, is the director of the Group for Research in Occupational Optics and the Secretary of the Vision Committee, Medical Research Council. His book is intended for the use of both medical and optical practitioners.

The chapters dealing with "the causes and symptoms of eye-strain," "the occupational demands upon sight," and "the facilitation of visual tasks" are particularly interesting and instructive. Stress is made on the need for an analysis and assessment of tasks according to their visual demands, whilst the effects of visual aids in certain classes of work upon the health of the worker and production are clearly demonstrated. The author points out that whilst it is usually more convenient and easier to adjust lighting to suit the job rather than to enlarge the work, yet the latter measure affords the greater help and leads to better performance. Sometimes the allegation is made that the use of glasses and magnifying devices by persons with normal vision in order to perform fine tasks is detrimental to eyesight. This suggestion is refuted by the writer, who considers the use of work glasses analogous to the employment of block and tackle for lifting weights.

It is pointed out that the statutory requirements for lighting are not the optimum needs, which for fine work are much greater than the legal standards. A pleas is made for the general adoption of the lumens per square foot as the unit of illumination. The chapter on the technique of testing sight for work is rather too detailed for the use of the average medical practitioner.

Members of the school health and industrial medical services will find the reading matter and the profuse and excellent illustrations most interesting and helpful.

Charts of Vitamin and Mineral Contents of Foodstuffs

The Research Laboratories of Vitamins, Ltd., 23, Upper Mall, Hammersmith, London, W.6, have issued four excellent four-page charts illustrating the vitamin and mineral contents of the commoner foodstuffs. The charts cover meat and fish, dairy produce, vegetables and fruits, and cereal foods. The method used is an interesting one, showing on the vertical scales the number of hours' supply of each vitamin and mineral component in a given weight of the foodstuff. This, combined with notes of the optimum daily requirement, gives very clear guidance. The vitamin and mineral components on each scale are clearly distinguished by colours. Introductory notes give a clear summary of the nutritional importance of the class of foodstuffs covered by the chart. The chart on fruits and vegetables is a revised edition of one first issued several years ago; the others are new productions. Vitamins, Ltd. Research Laboratories do not claim exactitude in the estimated vitamin values (based as they are on biological assays subject to variations) but they have drawn on the best recent sources and these charts should be much appreciated in health departments which have catering responsibilities or for health education purposes. Each chart costs 6d. (8d. post free).

SOCIETY OF MEDICAL OFFICERS OF HEALTH

ORDINARY MEETING

An Ordinary Meeting of the Society was held in the Hastings Hall, B.M.A. House, on Friday, May 19th, 1950, at 12.15 p.m. The President (Dr. H. C. Maurice Williams, O.B.E.) was in the chair and some 20 members attended.

The minutes of the last Ordinary Meeting having been confirmed and signed, Sir Allen Daley reported that it was the unanimous decision of the Council that the name of Dr. John McIlrath Gibson be placed before the Society for election as President for the session 1950–51. The recommendation had come from the Yorkshire Branch, with the strong support of the North-Western Branch. The motion was seconded by Dr. G. A. W. Neill, who expressed pleasure as an Ulsterman that this honour should come to a fellow countryman, and pointed out that Dr. Gibson's year would coincide with that of his elder brother as Moderator of the Presbyterian Church in Ireland. The motion was carried unanimously and with acclamation. Dr. Gibson briefly expressed gratitude for his election his sense of the honour done him.

The meeting proceeded to the election of the following as fully paid Life members on the recommendation of the Council and their Branches as shown:—

Home Counties Branch.

Dr. R. P. Garrow (formerly M.O.H., Hornsey). Joined the Society, 1919.

Northern Ireland Branch.

Dr. J. Gillespie (formerly Chest Physician, Co. Down). Joined the Society, 1919.

North-Western Branch.

Dr. Catharine L. Corbett (formerly A.S.M.O., Lancs.). Joined the Society, 1908.

Dr. R. D. Duncan (formerly M.O.H., Altrincham U.D.). Joined the Society, 1923.

Dr. R. Gamlin (formerly Senior A.S.M.O., Liverpool). Joined the Society, 1918.

Yorkshire Branch.

Dr. R. Cattley (formerly M.O.H., York). Joined the Society, 1897.

The following candidates, having been duly proposed and seconded, were then elected as Fellows of the Society:—

Bonnett, Eric John Swithin, Col., M.R.C.S., L.R.C.P., D.P.H.; Gaunt, Thelma R., M.B., CH.B. (LIV.), D.P.H.; McClatchey, Samuel, M.B., B.CH., B.A.O., D.P.H.; Mitchell, Robert, B.SC. (HONS.), M.B., CH.B. (EDIN.), D.P.H.; Moss, Cecil, M.B. (BELF.), D.P.H.; Peterson, Osler L., M.B., M.D. (MINNESOTA), M.P.H.; Richards, Nest Gwenllian, B.SC., M.B., B.CH. (WA.), D.C.H.; Sharp, Clive Lechmere Ellis Hicks, M.R.C.S., L.R.C.P., D.P.H.

The meeting then terminated.

EAST ANGLIAN BRANCH

President: Dr. S. T. G. Gray (Dep. C.M.O.H., East Suffolk).
Hon. Secretary: Dr. A. J. Rae (Dep. C.M.O.H., West Suffolk).

A meeting of the Branch was held in the Lecture Theatre of the Department of Pathology, Cambridge, on Saturday, April 1st, 1950, at 3 p.m. The President was in the chair, and 23 members and visitors were present.

Prof. A. L. Banks, of the Department of Human Ecology, Cambridge, then gave a talk on "The Department of Human Ecology and the Medical Officer of Health" (published on other pages of this issue).

After tea there was discussion on the rehabilitation of the rural worker, which was inconclusive, although several speakers ranged over a wide field. It was pointed out that the pattern of rural life was changing, and that possibly in a few years village life as we know it to-day will have disappeared—the workers going out to the farms in gangs. Other speakers pointed out that home industries and divertional therapy suitable for a townsman were not of interest to a farm labourer. Dr. T. Ruddock-West pointed out that the existing machinery for dealing with blind persons could be expanded to deal with handicapped rural workers.

It was emphasised by several speakers that the problems of the urban worker and the solutions were not very applicable to those of the rural worker.

Dr. McFarlan explained his proposals for epidemiological investigations into the spread of the commoner infectious diseases in an attempt to draw conclusions which could be applied to more serious diseases. He stressed that M.O.H.s could play a very important part in the investigations since it was they who receive notifications from general practitioners.

It was agreed that the Branch should select a small committee for research into preventive medicine, as suggested by Prof. Banks, and that its composition should be considered at the next meeting on June 3rd.

MIDLAND BRANCH

President: Dr. W. R. Martine (Sen. Asst. M.O.H., Birmingham C.B.).

Hon. Secretary: Dr. W. Alcock (M.O.H., Burton-upon-Trent C.B.).

The fourth meeting of the Session was held at Lancaster Street Welfare Centre, Birmingham, on Thursday, February 2nd, 1950, at 3 p.m. There were 17 members present.

Specific Serum Conjugates

Dr. B. R. Sandiford, City Bacteriologist, Birmingham, delivered an address with this title.

As a practical bacteriologist he had for a long time entertained an idea which he had come to call "Specific Staining." There are very few bacterial infections, he said, which could be diagnosed by the microscope only. Of these, tuberculosis was a good example, although even here the Ziehl-Neelsen stain did not distinguish between the tubercle bacillus and saprophytic acid-fast bacilli. In the case of intestinal infections, the microscope failed to distinguish pathogens one from another and from non-pathogens. How useful it would be if, where the presence of a certain pathogen were suspected, we could detect it and differentiate it from other organisms with certainty by direct microscopical examination of a specimen from the patient.

The lecturer enumerated several possible lines of attacking the problem. The most promising seemed to be by means of what he referred to as "Specific Serum Conjugates." By this term he meant a specific anti-serum to which an active chemical grouping had been combined. This chemical grouping might be a dyestuff, either coloured or fluorescent, of which the latter seemed the more promising. With the aid of a grant from the Medical Research Council he was at present trying to prepare a fluorescent anti-Sonne S.S.C. With this it should be possible to stain a film of stools from a patient and then, under the ultra-violet microscope detect the Sonne bacilli.

It seemed likely that the method, if it worked, could be applied to certain virus diseases also. In smallpox, for instance, by using an anti-vaccinial S.S.C. it should be possible to demonstrate the presence of E.B.s in a direct film much more certainly than by the direct staining method that had been advocated by Van Rooyen.

The possible uses of S.S.C.s for diagnosis, went on Dr. Sandiford, were not the only ones. They might have an application in treatment. Anti-bacterial sera had been mostly disappointing for this. If, however, they were chemically conjugated with anti-bacterial substances, it should be possible to attach the antiseptic or antibiotic to the bacterial cell by means of the specific combining power of the antiserum.

It might even be possible to attack the cancer problem by this means. If a specific serum to the cancer cells could be prepared and coupled with a radio-active isomer an intense local radiation effect on the cells would be obtained.

A discussion followed in which Dr. Paul asked whether bacteriophage was likely to help in attacking bacteria or viruses, or whether any work had been done on the use of one virus against another.

Dr. Sandiford replied that the consensus of opinion was that bacteriophages were not of much value in treatment. What was known as the "Interference Phenomenon" had been described, in which the presence of one virus in the body interfered with the normal activities of another infecting virus.

Dr. Tabbush asked what was the nature of the reaction in Specific Staining, to which Dr. Sandiford replied that its principle was the use of an anti-serum as a link for specifically attaching the dye to a particular organism, leaving the other organisms unstained.

Dr. Clayton asked if the fluorescent microscope technique was being used for the detection of organisms other than T.B. The lecturer replied that it had been suggested for the detection of malaria parasites.

On the proposition of Dr. Tudor Lewis, seconded by Dr. Preston, a very cordial vote of thanks was given to the speaker for his most interesting and stimulating address.

This concluded the business of the meeting.

The fifth meeting of the Session was held at Lancaster Street Welfare Centre, Birmingham, on Thursday, March 2nd, 1950, at 3 p.m. Thirty-seven members were present.

The President extended a cordial welcome to Sir John Charles, Chief Medical Officer Elect to the Ministry of Health, who had been invited to attend the meeting. The President also thanked Dr. Cohen for taking the place of Dr. Scurlock at such short notice.

Handicapped Children

A discussion then followed on this subject, opened by Dr. H. M. Cohen, School Medical Officer for the City of Birmingham.

Dr. Cohen briefly indicated the relevant Sections of the Education Act, 1944, under which it becomes the duty of education authorities to provide education according to age, ability, and aptitude, and to ascertain that handicapped children shall have a place in the scheme.

Ascertainment was next considered. This is now better than it was in the past, due, no doubt, to the stimulus given by regional conferences.

Dr. Cohen then dealt in considerable detail with the various classes of handicapped children—blind and partially-sighted, deaf and partially-deaf, physically handicapped, those with multiple handicaps, the educationally subnormal, diabetics, and epileptics.

Dr. Cohen indicated the difficulties involved in catering for the special educational needs of such children, particularly those with combined or multiple handicaps. With regard to educationally subnormal children, ascertainment in the urban areas is fairly adequate, but is not so good in rural areas. For the maladjusted child, Dr. Cohen thought that small hostels, housing ten or 12 children scattered throughout an area, were better than large institutions.

Diabetics are best accommodated in a residential open-air school, and epileptics, who have suffered much in the past, should go to an ordinary school, except when the attacks are frequent and severe.

A discussion followed in which the following members took part.

Dr. Clayton—many spastics can derive a great deal of benefit from special residential accommodation, such as that at Carlson House, Birmingham. He asked if more could be done from the preventive aspect.

Dr. Sergeant had found it very difficult to get accommodation for heart cases, and very few schools catered for the multiple defect.

Dr. Preston indicated that physically handicapped children placed a heavy burden on parents, and thought the Home Help Service could help.

Dr. Starkie stressed the advantage, not only to the physically handicapped child, but also to other children in the same household, when the handicapped child is admitted to a residential school.

Dr. Cookson thought there might be merit in mixing certain handicapped children in residential schools.

Dr. Auden thought there had been extraordinary slowness in recognising a need for the care of handicapped children. He thought there was a grave disadvantage in segregating children, and quoted the practice in America (Philadelphia) where "opportunity classes" for dull and backward children are set up in ordinary schools.

Dr. Auden also stressed the need for some form of education for children who are in hospitals for long periods.

Dr. Cohen then replied. He referred Dr. Auden to the report of the Chief Medical Officer of the Ministry of Education, on the education of children in hospitals. Quite a large amount of work has been done on this subject. The subject of segregation comes up regularly. The problem bristles with difficulties. Long-term-stay and short-term-stay children cannot be mixed satisfactorily. Partially-sighted children often do well in an open-air school, but E.S.N.s and partially-sighted children will not mix.

There was great difficulty in getting staff, but Dr. Cohen was hopeful that more teachers would be encouraged to take up training.

With regard to prevention, clean milk supplies have greatly reduced the incidence of tuberculosis, and E.N.T. Clinics probably prevent a certain amount of deafness.

With regard to spastics, the cost of maintenance is very heavy, and it is doubtful if it is justified, except where children can definitely benefit.

Dr. Sergeant proposed a vote of thanks to the speaker, which was seconded by Dr. Pickup, and carried unanimously.

Sir John Charles then addressed the meeting. He said that he had come on a mission of goodwill and enquiry. He was very alive to the feeling of unrest and disturbance in the ranks of the Public Health Service, and whilst he thought this unhappiness had, to a certain extent, a financial basis, there were other factors. Sooner or later, however, the clouds would disappear.

He would always be very glad to receive helpful suggestions from members on matters affecting the Public Health Service.

Training of Health Visitors

A copy of the conclusions and recommendations arrived at by the Liaison Committee of the Society, having been circulated to members, was then discussed.

Dr. Mackintosh thought that the university course should precede the nursery training, and that there was no apparent reason for differentiation between the training of urban and rural health visitors.

Dr. Wyndham Parker felt that elasticity was needed in training. Rural health visitors, for example, would need more midwifery experience.

It was agreed that the report be received.

Standing Sub-Committee on Special Residential Schools in the West Midlands

The following members were appointed as representatives on the above Sub-Committee:—

Drs. Wyndham Parker, H. M. Cohen, and W. Alcock.

This concluded the business of the meeting.

Recent Milk Legislation

A special meeting of the Branch was held at Lancaster Street Welfare Centre, Birmingham, on January 5th, 1950, at 2.30 p.m., the subject for discussion being the recent Milk Legislation. Twenty-two members were present, together with 26 Milk and Dairies Inspectors, who had been invited to attend as guests of the Branch.

The discussion was opened by Dr. Lethem, Principal Medical Officer, Ministry of Food.

The President extended a cordial welcome to the guests and expressed the hope that further joint meetings would take place.

Dr. Lethem then addressed the meeting. He said that there was much loose thinking on the subject of milk. Great care was taken to ensure a supply of fresh milk, but many countries drank sour milk, and, in fact, an acid medium was inimical to pathogenic organisms.

He deplored the fact that more sampling was done to prevent watering than to ensure safety. The new milk regulations, however, give really effective powers to the Medical Officer of Health for ensuring a safe milk supply. The important factors were:—

(1) Freeing herds from bovine infection.
(2) Stopping the sale of suspected milk.
(3) More pasteurisation.

Dr. Lethem said that in regard to (1) we have not hitherto made any appreciable improvement in the freedom of milk from bovine infection.

Section 20 (2) of the Regulations was most important. It gave new power to stop sale on suspicion only.

With regard to (3) pasteurised milk was the only safe milk. If free from tubercle before pasteurisation, so much the better.

Milk Tests

Dr. Lethem then referred to the methods of milk testing. The Coli Test and Plate Count Tests have gone. The Methylene Blue Reduction Test is retained for the present, although it has never been regarded as satisfactory; the Clot-on-Boiling Test was being investigated.

Milk and Dairies Regulations

The first six parts deal largely with matters now controlled by the Ministry of Agriculture—water supply, milk rooms, cooling, veterinary inspection of cows, etc.

Part VII, which contains the provisions with regard to infection of milk, gives the Medical Officer of Health wide powers to prohibit persons milking cows, or handling milk vessels, who may be a source of infection, and for preventing the sale of milk infected or suspected of being infected with any disease which can be communicated to man.

Raw Milk Regulations

These will abolish the Accredited grade in a few years, and will require T.T. herds to be attested.

Pasteurised Milk Regulations

Food and Drugs Authorities become responsible for the issue of licences and may license any type and times of pasteurisation, subject to the consent of the Minister. The term "heat treated" is abolished.

This concluded Dr. Lethem's address, and a discussion followed in which several speakers took part.

The President (Dr. Martine) agreed it was good that terms such as "heat treated," "accredited," and "certified" were dead, or nearly so, but protested at the short notice given for the operation of the Regulations.

Dr. Ramage hoped for uniformity in methods of carrying out the Regulations, and for more precise instructions.

Dr. Paul strongly criticised Dr. Lethem's views, as to the relative unimportance of watering of milk, sour milk, or dirt in milk.

Dr. Jolly asked where all the inspectors are coming from, to carry out the work of inspection.

Mr. Leggatt (Warwickshire) thought the Regulations very ambiguous, and no improvement on the old ones.

Other speakers taking part were Dr. Griffin, Mr. Williams (Stafford Borough), Dr. Banks, Dr. Green, Mr. Prest (Staffs.), and Dr. Wyndham Parker.

In replying to questions, Dr. Lethem stated that his chief aim had been to stimulate criticism, and in this respect he felt fully satisfied.

A vote of thanks was proposed by Dr. Ramage, and seconded by Dr. Wyndham Parker.

This concluded the business of the meeting.

NORTHERN BRANCH

President: Dr. E. F. Dawson-Walker (M.O.H., Easington R.D.; M.O., Thorpe Isol. Hosp.).

Hon. Secretary: Dr. W. S. Walton, C.M. (M.O.H., Newcastle-on-Tyne C.B.).

A meeting of the Northern Branch was held in the Board Room, Elswick Grange, Newcastle-upon-Tyne, 4, on Friday, March 17th, 1950, at 4.30 p.m. The President, 19 members and four guests attended.

In opening the meeting the President welcomed as guests four doctors at present studying for the Diploma in Public Health.

The President congratulated Dr. C. Muir on his new appointment and conveyed the regrets of the Branch that this would probably be his last attendance as a member of the Northern Branch.

Annual Dinner. The Hon. Secretary reported that there had been 35 acceptances for the annual dinner to be held at the Royal Station Hotel on Friday, March 31st, 1950. Guest of honour would be the President of the Society, Dr. Maurice Williams, and it was hoped that later in the evening medical officers examining for the Royal Sanitary Institute would be present.

The Hon. Secretary submitted a letter from the Executive Secretary, enclosing a letter from the Middlesbrough Local Medical Committee of the British Medical Guild, asking for a nominee of the Branch to serve on the Committee. The Executive Secretary's letter explained that the Society could not take a direct part in the work of the British Medical Guild, but a Public Health Service Defence Trust was proposed which would collect subscriptions from the Public Health Service and then make contributions to the central fund of the British Medical Guild.

The Local Committees of the British Medical Guild were being set up not to collect contributions but to make for cohesion of the various sections of the profession and to advise the Central Guild of cases needing help. Further information about the proposed scheme for collecting from Public Health Service members would be forthcoming later.

It was agreed that the matter be deferred until fuller information was made available.

The Hon. Secretary submitted a letter from the Executive Secretary on the question of duties of medical officers of health under the National Assistance Act, 1948, and asking for information as to the number who were chief administrative officers for the purpose of the Act. This was in response to a letter from the Assistant Secretary of the British Medical Association asking for such information.

The Hon. Secretary stated that he had discussed the question with the Liaison Committee of Medical Officers of Health and had submitted to headquarters the information and views so far ascertained. Approval was given to the action of the Hon. Secretary.

The matter would also be discussed at the meeting of the County Borough Group in June.

(*a*) *Salaries.* Dr. Hebblethwaite, Branch representative on the Society's Council, stated that a meeting of the Whitley Council's Committee had been held on March 16th, but no information as to the outcome was available yet.

(*b*) *Iodisation of Salt.* Dr. Hebblethwaite gave the reasons for the Ministry of Food's intention to add a minute percentage of iodine to all salt available to the public. The information had also been conveyed to local Divisions of the British Medical Association.

After the President had stated that, as one of the oldest members of the Branch, and a Past President, he needed no introduction, Dr. A. I. Messer addressed the members on "The Public Health Laboratory Service."

A vote of thanks proposed by Dr. Muir was seconded and carried with acclamation. Replying, Dr. Messer invited the members to visit the City Laboratory at any time.

NORTH-WESTERN BRANCH

President: Dr. J. Yule (M.O.H., Stockport C.B.).

Hon. Secretary: Dr. J. S. G. Burnett (M.O.H., Preston C.B.).

An ordinary meeting of the Branch was held at Manchester Town Hall on Friday, April 14th, when 14 members were present. Mr. A. H. Walters gave an address on methods of combating cross infection, with special reference to the catering industry.

The Branch decided to nominate the following members for life membership of the Society :—

Dr. C. L. Corbett, lately Assistant School Medical Officer Lancashire County Council.

Dr. R. R. Duncan, lately Medical Officer of Health, Altrincham.

Dr. R. Gamlin, Senior Assistant School Medical Officer, Liverpool.

Consideration was given to a suggestion from the General Superintendent, St. Mary's Hospital, Manchester, that, with a view to strengthening the liaison between the hospital and the associated local health authorities, certain basic information be transmitted to the medical officer of health in respect of hospital confinements from his area.

The members accepted with pleasure the principle underlying the suggestion, and decided to refer the draft form to the clinical sub-group and to the medical officers of health of local health authorities for their consideration.

The annual meeting of the Branch was held at Lyme Hall, Stockport, on June 16th, 1950, when 44 members and guests were welcomed by the Mayor.

The President referred to the grievous loss suffered by the Branch in the death of Dr. R. M. Galloway, and the company stood in silence as a mark of respect.

The Report for the year of the Honorary Secretary, and the financial statement, were approved.

It was resolved that Bylaw 2 of the Branch's constitution be amended by the substitution of "8 to 10 members" for "8 members" after the word "secretary" in line 3 of the Bylaw.

Total Elections for Session 1950–51.—The following elections were made :—

President : Dr. F. W. Campbell Brown (M.O.H., Hyde).
Vice-President : Dr. J. Yule.
Hon. Secretary : Dr. J. S. G. Burnett.
Hon. Treasurer : Dr. J. Yule.
Council Members : Drs. C. Metcalfe Brown, J. S. G. Burnett, and J. Yule.
Committee Members : Drs. Bennett, Innes, Jenkins, Keddie, Semple, Spence, Stallybrass, Walker and Wood.

The members were then conducted round Lyme Hall and its beautiful park, and were subsequently entertained to tea by the Mayor of Stockport.

MATERNITY AND CHILD WELFARE GROUP

President: Dr. J. D. Kershaw (M.O.H., Colchester; Divl. M.O., Essex).
Hon. Secretary: Dr. Kathleen Hart (A.D.M.O., Middlesex).
Hon. Asst. Secretary: Dr. Mabel Dodds (A.D.M.O., Middlesex).

Post-Graduate Week-end, May 5th to 7th, 1950, Cardiff

Over 50 members assembled in Cardiff during the week-end May 5th to 7th, 1950, for a post-graduate course. The first lecture was given at 9.30 a.m. on Saturday, May 6th, by Prof. A. G. Watkins, in the City Hall.

Use and Abuse of Drugs in Infancy

Prof. Watkins was introduced by the President, Dr. Kershaw, and spoke on this subject.

He stressed the importance of the ante-natal period to the child and the possible danger of some drugs used then.

Where injections into the umbilical cord were given, there was the risk of the drug entering the artery. Coramine, for example, might track to the sciatic artery with a resulting syndrome of symmetrical necrotic areas in buttocks and paresis of one leg.

Oxygen was described as a life saver, but oxygen through a funnel was of no use except to the relatives, and the only way to give it was in some form of a closed box.

Prof. Watkins stressed the desirability of handling new-born babies as little as possible. Drops in eyes, and dressings to cord had been overdone in the past. There was no necessity to use eye drops at all, acting on the assumption that gonococci were not present. Gonococcal infection could be treated straight away if it should appear. For cord dressing his practice was to use sterile gauze without powder, and then leave it alone.

Of sedatives chloral hydrate had been found to be the most effective—but the basis of treatment for crying must in all cases be to discover and treat the cause.

Purgatives—again it was essential to find the cause of the constipation. Suppositories might be harmful by producing or increasing an anal fissure. A child with an infrequent normal motion could be left alone, but a hard motion was treated by giving the child extra fluid, and one of the liquid paraffin group.

Iron was given as FeS. as routine to premature babies and twins. Iron in dried milk might be almost entirely not absorbed.

Prof. Watkins also spoke on antibiotics and on vitamins and after a discussion a vote of thanks was given by Dr. Mary Fisher (Oxford).

Toxaemias of Pregnancy

This was followed at 11 a.m. by a lecture with the above title by Arwyn Evans, Esq., M.D., F.R.C.S., Obstetrician and Gynaecologist, who began by discussing the modern theories on the causation of toxaemia.

Speaking of eclampsia he instanced three interesting points:—

(*a*) The type of patient—short, full-necked, fair haired.

(*b*) Eclampsia diminished in the first world war where there was starvation, and in the second where fats were reduced.

(*c*) Climate seemed to cause variation. Eclampsia was more frequent in sudden changes of temperature.

Mr. Evans went on to discuss diagnosis and treatment of hyperemesis gravidarum, albuminuria and eclampsia, with especial reference to the differentiation between toxic and non-toxic hyperemesis, and to the importance of regular weighing of the patient, where a sudden jump of 7 or 8 lb. in a month would indicate a probability of approaching toxaemia.

Mayoral Luncheon and Visits

At 12.45 members of the Group were received at the City Hall by the Lord Mayor and Lady Mayoress of Cardiff, and were entertained to luncheon.

On Saturday afternoon the Group was taken by coach to St. David's Hospital. Here the party divided into groups, and an interesting afternoon was spent, by courtesy of Dr. J. Jones, Medical Superintendent, in seeing the Maternity Section, the Premature Unit and the Human Milk Bureau.

Course Dinner

On Saturday evening a dinner was held at the Park Hotel with the President of the Group, Dr. J. D. Kershaw, in the chair. The guests at the dinner were Dr. J. Greenwood Wilson, M.O.H., Cardiff; the Deputy Lord Mayor and Mrs. Muston; Dr. A. G. Watkins, Professor of Child Health; Dr. F. Grundy, Professor of Preventive Medicine, Welsh National School of Medicine; Dr. D. G. Morgan, Medical Superintendent, Llandough Hospital, Cardiff; Dr. J. Jones, Medical Superintendent, St. David's Hospital, Cardiff; Dr. Webster, Senior Medical Officer for Maternity and Child Welfare; Alderman J. Griffiths, Chairman of the Health Committee; Councillor D. T. Williams, Chairman of the M. & C.W. Sub-Committee; Dr. Jacobs.

Dr. Violet Russell proposed the toast of the City to which Councillor Muston replied. Dr. Greenwood Wilson proposed the toast of the Group to which Dr. Kershaw, the President, replied. Dr. Doris Craigmile proposed the toast to the guests, to which Prof. Watkins replied. A very enjoyable evening was brought to a close by a speech, full of humour, from Alderman Griffiths, Chairman of the Health Committee.

Visit to Llandough Hospital

On Sunday morning the Group was taken by coach out of the City to Llandough Hospital by courtesy of Dr. D. G. Morgan, Medical Superintendent. This hospital is situated on a hill and commands fine views of the surrounding country. Here we were favoured again with the presence of Prof. Watkins and Dr. J. Jones and were shown cases of coeliac disease, and films of congenital abnormalities of the gastro-intestinal tract. At Llandough, also, we had the opportunity of meeting two health visitors who visit the hospital regularly and follow up patients.

Members of the Group enjoyed the interesting sessions at Cardiff, and not least did we appreciate the feeling of welcome and friendliness which we experienced during the whole week-end. Much admiration was also given to the noble City Centre of which Cardiff is so justly proud.

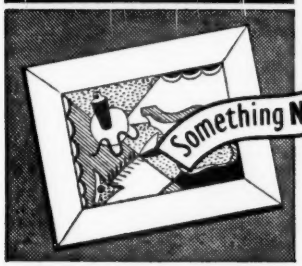
STATES OF GUERNSEY BOARD OF HEALTH

Medical Officer of Health and Tuberculosis Officer

Locum for four weeks

Applications are invited from registered medical practitioners holding a Diploma in Public Health or equivalent qualification, for the above appointment. The duties will be those usually carried out by Medical Officers of Health, including rural water supplies and sanitation, medical superintendent of a combined fever and sanitation hospital, medical officer to port and airport, and to chest clinic. The remuneration for the four weeks will be £100.

Rowan Revell,
Medical Officer of Health.



In art new schools of painting arise—in medicine new forms of old and valued therapeutic agents emerge—to satisfy new needs. So it is with Befortiss: capsules, ampoules, and now an Elixir.

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1 *To provide the B-complex in cases where signs or symptoms suggest deficiency of one or more factors, e.g., seborrhoeic dermatitis, cheilosis, glossitis, circumcorneal vascularisation.*

2 *To improve digestion and initiate a feeling of well-being in depressed patients.*

a new liquid B-complex preparation

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2 *Conditions calling for the B-complex in those adults who find capsules and tablets difficult to swallow.*

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FORMULA. Each ½ fl. oz. contains:

Vitamin B_1 B.P.	4 mg
Riboflavine B.P.	4 mg
Vitamin B_6 B.P.C.	2 mg
Nicotinic Acid B.P.	20 mg

In a syrup base.

DOSAGE. *For all ages, one teaspoonful taken if desired in a little water, 2-4 times daily, preferably after meals.*

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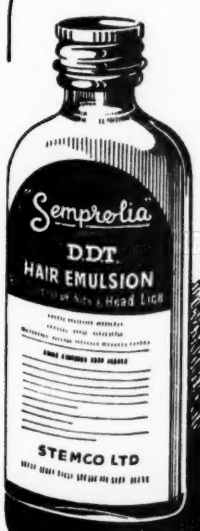
Head Lice and Nits...



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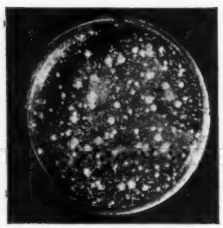
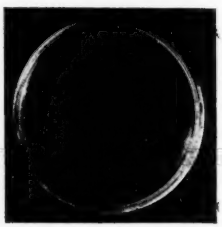
DEOSAN eliminates infection in washing-up water

Look at these photographs reproduced from actual slides

BEFORE TREATMENT WITH DEOSAN



Millions of bacteria found in untreated washing-up water.



Harmful bacteria completely eliminated.

AFTER TREATMENT WITH DEOSAN

Millions of bacteria found on cup washed in untreated water.

Cup entirely free from harmful bacteria.

BEFORE TREATMENT WITH DEOSAN

AFTER TREATMENT WITH DEOSAN

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IN YOUR OWN INTERESTS SAFEGUARD HEALTH BY THE DEOSAN METHOD

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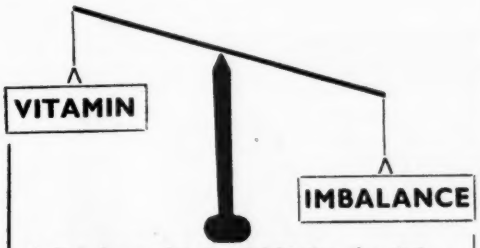

It is known that the administration of a single synthetic vitamin of the B complex may cause a deficiency of other factors. Because of the possible development of this type of vitamin imbalance, it is often considered preferable to give a natural source of the vitamin B group which supplies all the individual factors together.

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economy...
or the provision of optimal nutrition?

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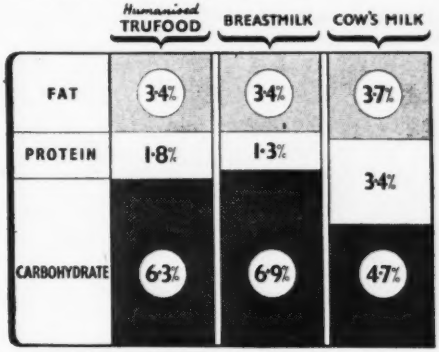
Note the similarity between Humanised Trufood and breast milk and the contrast of both with cow's milk.



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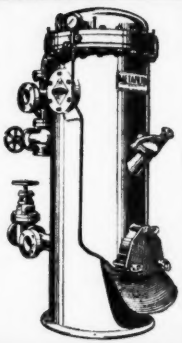

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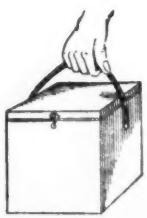

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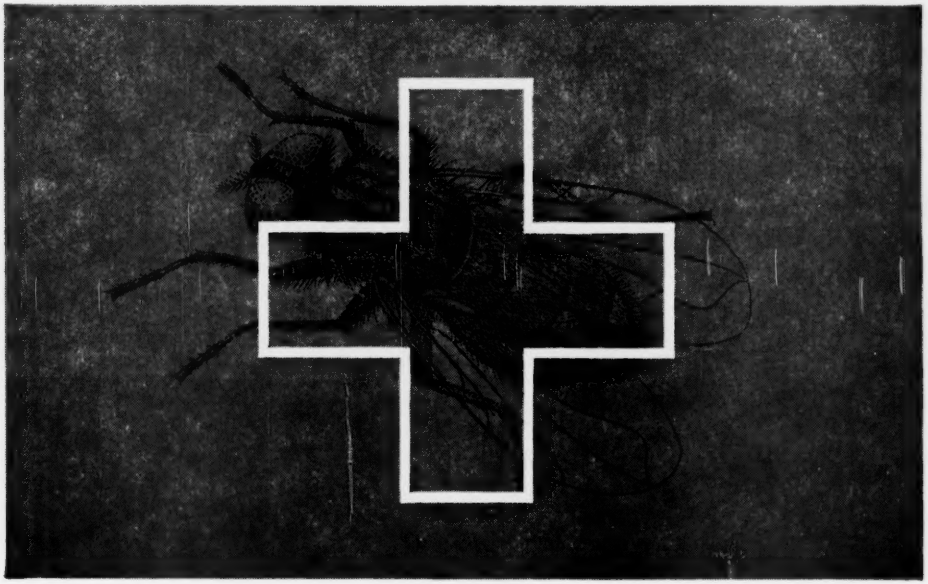

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